CONSTRUCTION DOCUMENTS
And
CONSTRUCTION SPECIFICATIONS
And
CONTRACT AGREEMENT
For

MANCHESTER SCHOOL OF TECHNOLOGY
GREENHOUSE REGLAZING

CITY OF MANCHESTER, NH
FACILITIES DIVISION
DEPARTMENT OF HIGHWAYS
2012

Kevin Sheppard, P.E. Public Works Director
Timothy J. Clougherty, Deputy Director, Highway
Kevin O'Maley, P.E. Chief Facilities Manager
Eric Krueger, Facilities Supervisor

CITY OF MANCHESTER
New Hampshire

Bidding Documents

PROPOSAL
CONTRACT AGREEMENT
GENERAL CONDITIONS

And

TECHNICAL SPECIFICATIONS/DRAWINGS

For

MANCHESTER SCHOOL OF TECHNOLOGY GREENHOUSE REGLAZING

APRIL, 2012

Prepared by
CITY OF MANCHESTER, NEW HAMPSHIRE
DEPARTMENT OF HIGHWAYS, FACILITIES DIVISION

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LEGAL NOTICE

INVITATION TO BID

MANCHESTER SCHOOL OF TECHNOLOGY, GREENHOUSE REGLAZING City of Manchester, NH

Sealed proposals in envelopes plainly marked:

MST REGLAZING, Project Number FY12-210-77

Addressed to: City of Manchester, New Hampshire
c/o Department of Highways, Facility Division
275 Clay Street, Manchester, NH 03103-5613

Bids will be received until Wednesday, April 18, 2012 by qualified contractors with recent commercial polycarbonate greenhouse experience, at 2:00 p.m. at the office of the Department of Highways at address noted above. Bids received after this time will not be accepted. Bids will be opened and publicly read aloud after specified closing time. All interested parties are invited to attend. No bid shall be withdrawn for a period of sixty (60) days subsequent to the opening of bids without the written consent of the Department of Highways, City of Manchester.

Project involves provisions of all engineering, labor, equipment, supervision and materials necessary to perform the removal and replacement of the existing glass greenhouse glazing with poly carbonate glazing. Construction start date is to be coordinated with the owner but anticipated to start in June, 2012.

A Bid Bond or Certified Check for 10% of the bid is required to be submitted with the bid. The Contract Documents will be available on Tuesday April 3 and are available for download at http://www.manchesternh.gov/website/Departments/Purchasing/BidOpportunitiesandResults/tabid/952/Default.aspx. A non mandatory pre-bid walkthrough is scheduled for Friday April 13, 2012 at 3:00 p.m. at the school greenhouse. The contact person for the project is Mr. Eric Krueger, Facilities Superintendent, City of Manchester, and Phone: 603-624-6555; E-mail: ekrueger@manchesternh.gov.

Selection of the successful bidder will be in accordance with Chapter 39: Procurement Code of the City of Manchester, Code of Ordinances. The Public Works Director reserves the right to waive any irregularities, reject any or all bids, and to accept the bid that appears to be in the best interest of the City. Failure to submit all information called for may be sufficient for disqualification. The City reserves the right to extend this contract to include additional related services at other City of Manchester public facilities.

Mr. Kevin O'Maley
Chief Facilities Manager
City of Manchester, New Hampshire

PROPOSAL

MANCHESTER SCHOOL OF TECHNOLOGY GREENHOUSE REGLAZING

PROPOSAL

The City of Manchester, acting through the Department of Highways hereinafter called the" Awarding Authority," requests bids for the furnishing of all labor, equipment, and materials required in accordance with the Contract Documents.

The undersigned as bidder declares that the only person or parties interested in this proposal as principals are those named herein; that this proposal is made without collusion with any other firm; that the undersigned has carefully examined the location of the proposed work, the proposed form of Contract and the Contract Documents therein referred to, and the undersigned proposes and agrees if this proposal is accepted, that he will contract with the Awarding Authority to provide all the necessary labor, machinery, tools, apparatus and other means of construction to do all the work and furnish all the materials specified in the Contract in the manner and time therein described and according to the requirements of the Owner therein set forth and the undersigned will take full payment therefore, the following prices:

_____

Name of Contractor (Bidder)

Base Bid: (Roof Re glazing)

The Bidder hereby proposes to furnish all plant, erection equipment, labor, materials, supplies, services, equipment and other facilities required, necessary, or incidental to the work required or contemplated for the completion of this Project in strict conformity with the Bidding and Contract Documents, of which this Proposal is a part, for the sum of

_____Dollars ($),

And in words; _____

hereinafter referred to as the Base Bid.

Deduct Alternate # 1: (Change Panel thickness to 16mm Panels)
_____Dollars ($),

And in words; _____

Deduct Alternate # 2: (Owner to supply ACBM Glazing Removal and Disposal)
_____Dollars ($),

And in words; _____

Add Alternate # 3: (Middle Interior Wall Re glaze with 8mm panels)
_____Dollars ($),

And in words; _____

The undersigned agrees that this bid shall be good and may not be withdrawn for a period of sixty (60) calendar days after the scheduled closing time for receiving bids.

SPECIAL CONSIDERATIONS – ADDENDUM RECEIPT

Bidders shall acknowledge below the receipt of any and all addenda to the Contract Documents, listing addenda by number and also by date.

Addendum No. Date

Addendum No. Date

Contractor to include with Bid Proposal form, Attachments #1.

The Bidder certifies that no official or employee of the City of Manchester, New Hampshire is connected in any way with the submission of this proposal.

No official or employee of the State of New Hampshire or the City of Manchester shall have any interest in the Contract during his tenure or one (1) year after.

Statutes of the State of New Hampshire and ordinances of the City of Manchester as they apply to the laws of competitive bidding are made a part of these Contract Documents.

Any property of the City which is damaged by an act or omission of the Contractor will be repaired or replaced in the manner approved by the Manchester School or the Facilities Division of the City of Manchester. The Department will be the sole judge of acceptance of the damaged corrections.

The Bidder further certifies that he has familiarized himself with the data contained in the Contract Documents and has taken the contents thereof into account in the preparation of the Base Bid, as well as alternate bid prices.

The undersigned hereby agrees to complete all the work shown or specified under this Contract within the required construction schedule.

_____
Contractor (Bidder) (Seal)

By_____
Signature and Title

Address _____

Being a (Corporation incorporated under the laws of the State of) _____

(Partnership),

(Individual),

composed of (officers), (partners), (owner) as follows:

_____

_____

_____

(Corporate Seal)

ATTACHMENT 1

MANCHESTER SCHOOL OF TECHNOLOGY GREENHOUSE REGLAZING City of Manchester, NH

MANCHESTER, NEW HAMPSHIRE

Attach to the bid proposal form for Manchester School of Technology Greenhouse Reglazing.

LIST OF MAJOR SUBCONTRACTORS
If awarded the Contract for this project, the Bidder proposes to award contractors or subcontractors in accordance with the following schedule:

SUBCONTRACT	PROPOSED SUBCONTRACTOR	SUB-BID VALUE
Reglazing	_____	_____
Demolition ACBM Removal	_____	_____

The foregoing is confidential information for the use of the Owner only.

Bidder _____

Date: _____ _____ 2012

DRAFT

AIA® Document A701™ – 1997

Instructions to Bidders

for the following PROJECT:

GREENHOUSE REGLAZING, MST School
Manchester, NH

THE OWNER:
City of Manchester, Municipality
275 Clay Street, Manchester, NH 03103

THE ARCHITECT:
City of Manchester

TABLE OF ARTICLES

ADDITIONS AND DELETIONS: The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

ARTICLE 1 DEFINITIONS

§ 1.1 Bidding Documents include the Bidding Requirements and the proposed Contract Documents. The Bidding Requirements consist of the Advertisement or Invitation to Bid, Instructions to Bidders, Supplementary Instructions to Bidders, the bid form, and other sample bidding and contract forms. The proposed Contract Documents consist of the form of Agreement between the Owner and Contractor, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications and all Addenda issued prior to execution of the Contract.

§ 1.2 Definitions set forth in the General Conditions of the Contract for Construction, AIA Document A105, or in other Contract Documents are applicable to the Bidding Documents.

§ 1.3 Addenda are written or graphic instruments issued by the Architect prior to the execution of the Contract which modify or interpret the Bidding Documents by additions, deletions, clarifications or corrections.

§ 1.4 A Bid is a complete and properly executed proposal to do the Work for the sums stipulated therein, submitted in accordance with the Bidding Documents.

§ 1.5 The Base Bid is the sum stated in the Bid for which the Bidder offers to perform the Work described in the Bidding Documents as the base, to which Work may be added or from which Work may be deleted for sums stated in Alternate Bids.

§ 1.6 An Alternate Bid (or Alternate) is an amount stated in the Bid to be added to or deducted from the amount of the Base Bid if the corresponding change in the Work, as described in the Bidding Documents, is accepted.

§ 1.7 A Unit Price is an amount stated in the Bid as a price per unit of measurement for materials, equipment or services or a portion of the Work as described in the Bidding Documents.

§ 1.8 A Bidder is a person or entity who submits a Bid and who meets the requirements set forth in the Bidding Documents.

§ 1.9 A Sub-bidder is a person or entity who submits a bid to a Bidder for materials, equipment or labor for a portion of the Work.

1.10 **Meaning of Terms.** Wherever in these specifications or in other contract documents the following terms or pronouns in place of them are used, the intent and meaning shall be interpreted as follows:

Act of God. Unusual, sudden and unexpected manifestation of the forces of nature, the effect of which could not have been prevented by reasonable human foresight, pains and care.

Advertisement. See Invitation for Bids.

Alteration Order (Alteration in Design). An order covering changes in the plans or quantities or both within the scope of the contract establishment the basis of payment and time adjustments for the work affected by the changes.

Award. The acceptance of a proposal by the Department.

Bidder. An individual, partnership, firm, corporation or any combination thereof, or joint venture, submitting a proposal.

Board. The Board of Mayor and Aldermen.

Calendar Day. A day shown on the calendar.

Change Order. See Alteration Order.

City. The City of Manchester, New Hampshire.

Commissioners. The Commissioners of the Department of Highways.

Complete in Place. All work indicated to be performed as part of the contract item except as may be otherwise specified under the Method of Measurement or Basis of Payment.

Conduit. Unless the connotation is to the contrary, a tube intended to carry electrical or other utilities.

Contract. The written agreement between the City and the Contractor setting forth the obligations of the parties thereunder, including but not limited to the performance of the work and the basis of payment. The contract includes the invitation for bids, proposal, contract form and contract bond, specifications, supplemental notice to proceed, also any change orders and agreements that are required to complete the construction of the work in an acceptable manner, including authorized extensions thereof, all of which constitute one instrument.

Contract Bond. The approved form of security in compliance with RSA 447:16 executed by the Contractor and his Surety or Sureties, guaranteeing complete execution of the contract and all supplemental agreements pertaining thereto and the payment of all legal debts pertaining to the construction of the project.

Contract Time. The time allowed for completion of the contract, including authorized time extensions.
Contractor. The individual, partnership, firm, corporation or any combination thereof, or joint venture, contracting with the Department for performance of prescribed work. Said person or persons shall be designated as the party of the second part to the contract.

Day. Unless designated as a working day or unless otherwise indicated, this term will mean a calendar day.

Department. The City of Manchester, New Hampshire, Department of Highways, designated as the party of the first part to the contract.

Director. The Public Works Director of the City of Manchester, New Hampshire Department of Highways.

Engineer. The Chief Engineer of the Department either acting directly or through any duly authorized representatives.

Equipment. All machinery and equipment together with the necessary supplies for upkeep and maintenance, and also all tools and apparatus necessary for the proper construction and acceptable completion of the work.

Expression: By or to the Engineer. In order to avoid cumbersome and confusing repetition of expressions in these specifications, it is hereby provided that any and all of the following words or any form of such words, unless clearly indicated otherwise, shall be understood to be followed by the words "by the Engineer" or "to the Engineer": Accepted, approved, authorized, condemned, considered or deemed necessary, contemplated, designated, determined, directed, disapproved, established, given, indicated, insufficient, ordered, permitted, rejected, required, reserved, satisfactory, specified, sufficient, suitable, suspended, unacceptable, unsatisfactory.

Extra Work. Work not provided for in the contract as awarded but found by the Engineer to be essential to the satisfactory completion of the contract within its intended scope. Such extra work may be performed at bid prices, agreed prices (Supplementary Agreement), or on a force account basis.

Highway. A public way designated for purposes of vehicular travel or vehicular and pedestrian travel, including the entire area within the right-of-way.

Holidays. In the City of Manchester, legal holidays occur:

January 1st (New Year's Day)
The third Monday in February (President's Day)
Civil Right's Day
May (Memorial Day)
July 4th (Independence Day)
The first Monday in September (Labor Day)
The second Monday in October (Columbus Day)
The first Tuesday in November (Election Day)
November (Veteran's Day)
Thanksgiving Day
Christmas Day

Inspector. The Engineer's authorized representative assigned to make detailed inspections of contract performance.

Invitation for Bids. The advertisement for Proposals for Work on which bids are requested. Such advertisement will state the time and place of the opening of Proposals, provide information regarding Plans, Specifications and Proposal forms. and give other data and instructions.

Item Numbers and Section Numbers. In these specifications, items are numbered to correspond to sections. Each item shall be constructed in accordance with the specifications contained in the corresponding section. The section numbers are intended for convenience of reference only and shall not be considered as having any bearing on the interpretation thereof. In case of discrepancy between what the numbers for the items would indicate and the item as written in words, the item written in words shall govern.

Laboratory. Any testing laboratory which may be designated or approved by the Engineer.

Materials. Any substances specified for use in the construction of the project and its appurtenances.

Plans. The contract drawings or reproductions thereof, which show the location, character, dimensions and details of the prescribed work, including all alterations thereof permissible under the contract and authorized by duly approved written orders.

Prime Contractor. The Contractor as defined above.

Project. The specific area of the work together with all appurtenances to be constructed under the contract.

Proposal. The offer of a Bidder on the proposal form, to perform the prescribed work at the prices quoted.

Proposal Form. The prescribed form on which the Department requires bids to be submitted..

Proposal Guaranty. The security furnished with a bid to guarantee that the Bidder will enter into the contract if his bid is accepted.

Right-of-Way. A general term denoting land, property or interest therein, usually in a strip acquired for or devoted to transportation purposes.

Subcontractor. An individual, partnership, firm, corporation or any combination thereof, or joint venture, to whom the Contractor sublets any part of the contract.

Subsidiary and Subsidiary Item. These terms are used to indicate work for which no direct payment will be made. Such work is considered to be incidental to items having contract prices and the bid prices submitted by the Contractor, shall be sufficient to absorb the cost of all work designated as subsidiary or as subsidiary items.

Superintendent. The Contractor's authorized representative in responsible charge of the work.

Supplemental Specifications. Approved additions and revisions to the Standard Specifications.

Supplementary Agreement. A written agreement executed by the Contractor and the Department covering the performance of work not included in the original contract.

Surety. The corporation, partnership or individual other than the Contractor, executing a bond furnished by the Contractor.

Work. The furnishing of all labor, materials, equipment and incidentals necessary or convenient to the successful completion of the project and the carrying out of the duties and obligations imposed by the contract.

Working Day. A calendar day during which construction operations could proceed for a major part of a shift; normally excludes Saturdays, Sundays and legal holidays recognized by the City.

Working Drawings. Stress sheets, shop drawings, erection plans, falsework plans, framework plans, cofferdam plans, bending diagrams for reinforcing steel, or any other supplementary plans or similar data which the Contractor is required to submit for

ARTICLE 2 BIDDER'S REPRESENTATIONS

§ 2.1 The Bidder by making a Bid represents that:

§ 2.1.1 The Bidder has read and understands the Bidding Documents or Contract Documents, to the extent that such documentation relates to the Work for which the Bid is submitted, and for other portions of the Project, if any, being bid concurrently or presently under construction.

§ 2.1.2 The Bid is made in compliance with the Bidding Documents.

§ 2.1.3 The Bidder has visited the site, become familiar with local conditions under which the Work is to be performed and has correlated the Bidder's personal observations with the requirements of the proposed Contract Documents.

§ 2.1.4 The Bid is based upon the materials, equipment and systems required by the Bidding Documents without exception.

ARTICLE 3 BIDDING DOCUMENTS

§ 3.1 COPIES

§ 3.1.1 Bidders may obtain complete sets of the Bidding Documents from the issuing office designated in the Advertisement or Invitation to Bid in the number and for the deposit sum, if any, stated therein..

§ 3.1.2 Bidders shall use complete sets of Bidding Documents in preparing Bids; neither the Owner nor Architect assumes responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.

§ 3.1.4 The Owner and Architect may make copies of the Bidding Documents available on the above terms for the purpose of obtaining Bids on the Work. No license or grant of use is conferred by issuance of copies of the Bidding Documents.

§ 3.2 INTERPRETATION OR CORRECTION OF BIDDING DOCUMENTS

§ 3.2.1 The Bidder shall carefully study and compare the Bidding Documents with each other, and with other work being bid concurrently or presently under construction to the extent that it relates to the Work for which the Bid is submitted, shall examine the site and local conditions, and shall at once report to the Architect errors, inconsistencies or ambiguities discovered.

§ 3.2.2 Bidders and Sub-bidders requiring clarification or interpretation of the Bidding Documents shall make a written request which shall reach the Architect at least seven days prior to the date for receipt of Bids.

§ 3.2.3 Interpretations, corrections and changes of the Bidding Documents will be made by Addendum. Interpretations, corrections and changes of the Bidding Documents made in any other manner will not be binding, and Bidders shall not rely upon them.

§ 3.3 SUBSTITUTIONS

§ 3.3.1 The materials, products and equipment described in the Bidding Documents establish a standard of required function, dimension, appearance and quality to be met by any proposed substitution.

§ 3.3.2 No substitution will be considered prior to receipt of Bids unless written request for approval has been received by the Architect at least ten days prior to the date for receipt of Bids. Such requests shall include the name of the material or equipment for which it is to be substituted and a complete description of the proposed substitution including drawings, performance and test data, and other information necessary for an evaluation. A statement setting forth changes in other materials, equipment or other portions of the Work, including changes in the work of other contracts that incorporation of the proposed substitution would require, shall be included. The burden of proof of the merit of the proposed substitution is upon the proposer. The Architect's decision of approval or disapproval of a proposed substitution shall be final.

§ 3.3.3 If the Architect approves a proposed substitution prior to receipt of Bids, such approval will be set forth in an Addendum. Bidders shall not rely upon approvals made in any other manner.

§ 3.3.4 No substitutions will be considered after the Contract award unless specifically provided for in the Contract Documents.

§ 3.4 ADDENDA

§ 3.4.1 Addenda will be transmitted to all who are known by the issuing office to have received a complete set of Bidding Documents.

§ 3.4.2 Copies of Addenda will be made available for inspection wherever Bidding Documents are on file for that purpose.

§ 3.4.3 Addenda will be issued no later than four days prior to the date for receipt of Bids except an Addendum withdrawing the request for Bids or one which includes postponement of the date for receipt of Bids.

§ 3.4.4 Each Bidder shall ascertain prior to submitting a Bid that the Bidder has received all Addenda issued, and the Bidder shall acknowledge their receipt in the Bid. No interpretations of the meaning of the plans, specifications, or other contract documents will be made to any bidder orally. Every request for such interpretation should be made in writing and sent to the owners representative. To be consideration, request for each interpretation must be received at least five days prior to the date fixed for the opening of bids. Any and all such interpretations and any supplemental instructions will be in the form of written addenda the specifications which, if issued, will be sent to all prospective bidders of record (at the respective addresses furnished for such purposes) not later than three days prior to the date fixed for the opening of bids. Questions received less than five days before the bid cannot be answered.

Failure of any bidder to receive any such addendum or interpretation shall not relieve the bidder from any obligation under his bid as submitted. All addenda so issued shall become part of the contract documents.

Before submitting Bids, bidders should carefully examine the drawings and specifications, visit the site of work, fully inform themselves as to all existing conditions and limitations, and shall include in the Bid a sum to cover the cost of all items included in the contract.

The competency and responsibility of bidders will be considered in making the award. The Owner reserves the right to reject any or all Bids and to waive any irregularities in connection therewith

ARTICLE 4 BIDDING PROCEDURES

§ 4.1 PREPARATION OF BIDS

§ 4.1.1 Bids shall be submitted on the forms included with the Bidding Documents.

§ 4.1.2 All blanks on the bid form shall be legibly executed in a non-erasable medium.

§ 4.1.3 Sums shall be expressed in both words and figures. In case of discrepancy, the amount written in words shall govern.

§ 4.1.4 Interlineations, alterations and erasures must be initialed by the signer of the Bid.

§ 4.1.5 All requested Alternates shall be bid. If no change in the Base Bid is required, enter "No Change."

§ 4.1.6 Where two or more Bids for designated portions of the Work have been requested, the Bidder may, without forfeiture of the bid security, state the Bidder's refusal to accept award of less than the combination of Bids stipulated by the Bidder. The Bidder shall make no additional stipulations on the bid form nor qualify the Bid in any other manner.

§ 4.1.7 Each copy of the Bid shall state the legal name of the Bidder and the nature of legal form of the Bidder. The Bidder shall provide evidence of legal authority to perform within the jurisdiction of the Work. Each copy shall be signed by the person or persons legally authorized to bind the Bidder to a contract. A Bid by a corporation shall further give the state of incorporation and have the corporate seal affixed. A Bid submitted by an agent shall have a current power of attorney attached certifying the agent's authority to bind the Bidder.

§ 4.2 BID SECURITY

§ 4.2.1 Each Bid shall be accompanied by a bid security in the form and amount required if so stipulated in the Instructions to Bidders. The Bidder pledges to enter into a Contract with the Owner on the terms stated in the Bid and will, if required, furnish bonds covering the faithful performance of the Contract and payment of all obligations arising thereunder. Should the Bidder refuse to enter into such Contract or fail to furnish such bonds if required, the amount of the bid security shall be forfeited to the Owner as a penalty. The amount of the bid security shall not be forfeited to the Owner in the event the Owner fails to comply with Section 6.2. Each Prime Contract Bid must be accompanied by a Bid Bond, Cashier's Check or a Certified Check of the bidder, payable to City Finance Officer, City of Manchester, in the amount of 5% Of the Proposal amount.

§ 4.2.2 If a surety bond is required, it shall be written on AIA Document A310, Bid Bond, unless otherwise provided in the Bidding Documents, and the attorney-in-fact who executes the bond on behalf of the surety shall affix to the bond a certified and current copy of the power of attorney.

§ 4.2.3 The Owner will have the right to retain the bid security of Bidders to whom an award is being considered until either (a) the Contract has been executed and bonds, if required, have been furnished, or (b) the specified time has elapsed so that Bids may be withdrawn or (c) all Bids have been rejected.

§ 4.3 SUBMISSION OF BIDS

§ 4.3.1 All copies of the Bid, the bid security, if any, and any other documents required to be submitted with the Bid shall be enclosed in a sealed opaque envelope. The envelope shall be addressed to the party receiving the Bids and shall be identified with the Project name, the Bidder's name and address and, if applicable, the designated portion of the Work for which the Bid is submitted. If the Bid is sent by mail, the sealed envelope shall be enclosed in a separate mailing envelope with the notation "SEALED BID ENCLOSED" on the face thereof.

§ 4.3.2 Bids shall be deposited at the designated location prior to the time and date for receipt of Bids. Bids received after the time and date for receipt of Bids will be returned unopened.

§ 4.3.3 The Bidder shall assume full responsibility for timely delivery at the location designated for receipt of Bids.

§ 4.3.4 Oral, telephonic, telegraphic, facsimile or other electronically transmitted bids will not be considered.

§ 4.4 MODIFICATION OR WITHDRAWAL OF BID

§ 4.4.1 A Bid may not be modified, withdrawn or canceled by the Bidder during the stipulated time period following the time and date designated for the receipt of Bids, and each Bidder so agrees in submitting a Bid.

§ 4.4.2 Prior to the time and date designated for receipt of Bids, a Bid submitted may be modified or withdrawn by notice to the party receiving Bids at the place designated for receipt of Bids. Such notice shall be in writing over the

signature of the Bidder. Written confirmation over the signature of the Bidder shall be received, and date- and time-stamped by the receiving party on or before the date and time set for receipt of Bids. A change shall be so worded as not to reveal the amount of the original Bid.

§ 4.4.3 Withdrawn Bids may be resubmitted up to the date and time designated for the receipt of Bids provided that they are then fully in conformance with these Instructions to Bidders.

§ 4.4.4 Bid security, if required, shall be in an amount sufficient for the Bid as resubmitted.

ARTICLE 5 CONSIDERATION OF BIDS

§ 5.1 OPENING OF BIDS

At the discretion of the Owner, if stipulated in the Advertisement or Invitation to Bid, the properly identified Bids received on time will be publicly opened and will be read aloud. An abstract of the Bids may be made available to Bidders.

§ 5.2 REJECTION OF BIDS

The Owner shall have the right to reject any or all Bids. A Bid not accompanied by a required bid security or by other data required by the Bidding Documents, or a Bid which is in any way incomplete or irregular is subject to rejection.

§ 5.3 ACCEPTANCE OF BID (AWARD)

§ 5.3.1 It is the intent of the Owner to award a Contract to the lowest qualified Bidder provided the Bid has been submitted in accordance with the requirements of the Bidding Documents and does not exceed the funds available. The Owner shall have the right to waive informalities and irregularities in a Bid received and to accept the Bid which, in the Owner's judgment, is in the Owner's own best interests.

§ 5.3.2 The Owner shall have the right to accept Alternates in any order or combination, unless otherwise specifically provided in the Bidding Documents, and to determine the low Bidder on the basis of the sum of the Base Bid and Alternates accepted.

ARTICLE 6 POST-BID INFORMATION

§ 6.1 CONTRACTOR'S QUALIFICATION STATEMENT

§ 6.2 OWNER'S FINANCIAL CAPABILITY

§ 6.3 SUBMITTALS

§ 6.3.1 The Bidder shall, after notification of selection for the award of a Contract, furnish to the Owner through the Architect in writing:

.1 a designation of the Work to be performed with the Bidder's own forces;

.2 names of the manufacturers, products, and the suppliers of principal items or systems of materials and equipment proposed for the Work; and

.3 names of persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for the principal portions of the Work.

§ 6.3.2 The Bidder will be required to establish to the satisfaction of the Architect and Owner the reliability and responsibility of the persons or entities proposed to furnish and perform the Work described in the Bidding Documents.

§ 6.3.3 Prior to the execution of the Contract, the Architect will notify the Bidder in writing if either the Owner or Architect, after due investigation, has reasonable objection to a person or entity proposed by the Bidder. If the Owner or Architect has reasonable objection to a proposed person or entity, the Bidder may, at the Bidder's option, (1) withdraw the Bid or (2) submit an acceptable substitute person or entity with an adjustment in the Base Bid or Alternate Bid to cover the difference in cost occasioned by such substitution. The Owner may accept the adjusted bid price or disqualify the Bidder. In the event of either withdrawal or disqualification, bid security will not be forfeited.

§ 6.3.4 Persons and entities proposed by the Bidder and to whom the Owner and Architect have made no reasonable objection must be used on the Work for which they were proposed and shall not be changed except with the written consent of the Owner and Architect.

DRAFT

AIA® Document A105™ – 2007

Standard Form of Agreement Between Owner and Contractor for a Residential or Small Commercial Project

AGREEMENT made as of the day of in the year
(In words, indicate day, month and year.)

BETWEEN the Owner:
(Name, address and other information)

City of Manchester
Highway Department, Facilities Division
275 Clay Street
Manchester, NH 03103
Telephone Number: 603-624-6554
Fax Number: 603-624-6562

and the Contractor:
(Name, address and other information)

for the following Project:
(Name, location and detailed description)

Greenhouse Reglazing

The Architect:
(Name, address and other information)

The City of Manchester

The Owner and Contractor agree as follows.

ADDITIONS AND DELETIONS: The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

State or local law may impose requirements on contracts for home improvements. If this document will be used for Work on the Owner's residence, the Owner should consult local authorities or an attorney to verify requirements applicable to this Agreement.

ELECTRONIC COPYING of any portion of this AIA® Document to another electronic file is prohibited and constitutes a violation of copyright laws as set forth in the footer of this document.

TABLE OF ARTICLES

ARTICLE 1 THE CONTRACT DOCUMENTS

§ 1.1 The Contractor shall complete the Work described in the Contract Documents for the Project. The Contract Documents consist of

.1 This Agreement signed by the Owner and Contractor;

.2 The drawings and specifications prepared by the Architect, dated , and enumerated as follows:

Drawings:

Number	Title	Date

Specifications:

Section	Title	Pages

.3 addenda prepared by the Architect as follows:

Number	Date	Pages

.4 written orders for changes in the Work issued after execution of this Agreement; and

.5 other documents, if any, identified as follows:

.6 In absence of an Architect/Engineer, all references to such are assumed by the City of Manchester project rep.

.7 If there are any discrepancies in the documents noted above, the owner will have sole discretion to choose which shall take precedence.

§ 1.2.1 All work mentioned or indicated in the Contract Documents shall be performed by the Contractor as part of this Contract unless it is specifically indicated in the Contract Documents that such work is to be done by others, Should the drawing or the Specifications disagree in themselves or with each other, the Contractor shall provide the better quality or greater quantity of work and/or materials unless otherwise directed by written addendum to the Contract

§ 1.3.2 The Contractor and all Subcontractors shall refer to all of the Drawings, include those showing primarily the work of the mechanical, electrical and other specialized trades, and to all of the Sections of the Specifications, and shall perform all work reasonably inferable therefrom as being necessary to product the indicated results.

§ 1.3.3 Where codes, standard, requirements and publications of public and private bodies are referred to in the Specifications, references shall be understood to be the latest revision prior to the date of receiving bids, except where otherwise indicated. These standards are not furnished to bidders for the reason that the bidders are assumed to be familiar with their requirements. The Engineer will furnish, upon request, information for obtaining copies of the standards referred to

§ 1.3.4 Where no explicit quality standards for materials or workmanship are established for work, such work is to be of good quality for the intended use and consistent with the quality of the surrounding work and of the construction of the project generally.

§ 1.3.5 All manufactured articles, materials, and equipment shall be applied, installed, connected, erected, used, cleaned, and conditioned in accordance with the manufacturer's written or printed direction and instruction unless otherwise indicated in the Contract Documents.

§ 1.3.5 The Drawings are generally made to scale, but all working dimensions shall be taken from the figured dimensions, or by actual measurements at the job, in no case by scaling. Study and compare all the Drawings and verity all figures before laying out or constructing work. The Contractor shall be responsible for errors in his work, which might have been avoided thereby. Whether or not an error is believed to exist, deviation from the Drawings and the dimension given thereon shall be made only after approval in writing from the Engineer.

§ 1.3.5 The Mechanical and Electrical Drawings are diagrammatic only and are not intended to show the exact physical location or configurations of work. Such work shall be installed to clear all obstruction, permit proper clearances for the work of other trades, and present an orderly appearance where exposed. Exact locations of fixtures and outlets shall be obtained from the Engineer before the work is roughed in; work installed without such information from the Engineer shall be relocated at the Contractor's expense.

§ 1.3.6 The failure by the Contractor to discover any error, inconsistency or omission in the Contract Documents shall not relieve him of the obligation to properly execute and complete the work. The Contractor shall be responsible for verification of field dimensions and conditions and shall furnish such information when requested by the Director.

ARTICLE 2 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

The number of calendar days available to the Contractor to substantially complete the Work is the Contract Time. The date of commencement of the Work shall be the date of this Agreement unless otherwise indicated below. The Contractor shall substantially complete the Work, no later than ( ) calendar days from the date of commencement, subject to adjustment as provided in Article 10 and Article 11.
(Insert the date of commencement, if it differs from the date of this Agreement.)

ARTICLE 3 CONTRACT SUM

§ 3.1 Subject to additions and deductions in accordance with Article 10, the Contract Sum is:

($)

§ 3.2 For purposes of payment, the Contract Sum includes the following values related to portions of the Work:
(Itemize the Contract Sum among the major portions of the Work.)

Portion of Work	Value
All enumerated documents above	

§ 3.3 Unit prices, if any, are as follows:
(Identify and state the unit price; state the quantity limitations, if any, to which the unit price will be applicable.)

Item	Units and Limitations	Price per Unit

§ 3.4 Allowances included in the Contract Sum, if any, are as follows:
(Identify allowance and state exclusions, if any, from the allowance price.)

Item	Price

§ 3.5 The Contract Sum is based upon the following alternates, if any, which are described in the Contract Documents and hereby accepted by the Owner:
(State the numbers or other identification of accepted alternates. If the bidding or proposal documents permit the Owner to accept other alternates subsequent to the execution of this Agreement, attach a schedule of such other alternates showing the amount for each and the date when that amount expires.)

§ 3.6 The Contract Sum shall include all items and services necessary for the proper execution and completion of the Work.

ARTICLE 4 PAYMENT

§ 4.1 Based on Contractor's Applications for Payment certified by the Architect, the Owner shall pay the Contractor, in accordance with Article 12, as follows:
(Insert below timing for payments and provisions for withholding retainage, if any.)

4.1.1 Based upon Applications for payment submitted to the Architect by the Contractor and Certificates for Payment issued by the Architect, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided in the Conditions of the Contract as follows:

On or about the fifteenth day of each month ninety percent (90%) of the portion of the Contract Sum properly allocated to labor, materials and equipment incorporated in the Work and ninety percent (90%) of the portion of the Contract Sum properly allocated to materials and equipment suitable stored at the site or at some other location agreed upon in writing by the parties, up to the (10) days prior to the date on which the Application for payment is submitted, less the aggregate of previous payments in each case. The period for the application shall be the 15th of the previous month to the 15th of the current month. Owner shall issue payment on or about the 15th of the following month, provided however, that the Contractor present a Contractor's Application for Payment to the Owner on or before the twenty fifth (5th) day of the month in which the Work is performed. If an Application for Payment is received by the Owner after the date fixed above, Payment shall be made by the Owner not later than 60 days after the Owner receives the Application for payment. The Owner reserves the right to withhold payment if he does not feel substantial proof exists for certification of payment, without penalty.
Until final payment, the Owner will pay ninety percent (90%) of the amount due the Contractor on account of Progress Payments.

§ 4.2 Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at the rate below, or in the absence thereof, at the legal rate prevailing at the place of the Project.

0 (0%) per annum

ARTICLE 5 INSURANCE

§ 5.1 The Contractor shall provide Contractor's general liability and other insurance as follows:
(Insert specific insurance requirements and limits.)
INDEMNIFICATION AND INSURANCE REQUIREMENTS

In consideration of the utilization of Contractors services by the City of Manchester and other valuable consideration, the receipt of which is hereby acknowledged, Contractor agrees that all persons furnished by Contractor shall be considered the Contractor's employees or agents and that Contractor shall be responsible for payment of all unemployment, social security and other payroll taxes including contributions from them when required by law.

CONTRACTOR hereby agrees to protect, defend, indemnify and hold the City of Manchester and its employees, agents officers and servants free and harmless from any and all losses, claims, liens, demands and causes of action of every kind and character including but not limited to, the amounts of judgements, penalties, interests, court costs, legal fees and all other expenses including claims, liens, debts, personal injuries including Injuries sustained by employees of the City, death or damages to property, including property of the City and without limitation by enumeration, all other claims or demands of every character occurring or in anyway incident to, in connection with or arising directly out Contractor's negligence or willful misconduct. CONTRACTOR agrees to investigate, handle, respond to, provide defense for and defend any such claims, demands or suits at the sole expense of the CONTRACTOR.

CONTRACTOR agrees to maintain In full force and effect:

A. Comprehensive General Liability insurance written on occurrence form, including completed operations coverage, personal injury liability coverage, broad form property damage liability coverage and contractual liability coverage insuring the agreements contained herein. The minimum limits of liability carried on such insurance shall be $1,000,000 each occurrence and where applicable, in the aggregate combined single limit for bodily Injury and property damage liability; $1,000,000 annual aggregate personal injury liability.

B. Builders Risk Insurance which shall be written under an all risk policy, with the limits of insurance to equal 100% of the complete value of such addition(s), building(s), or structure(s).

C. Waiver of Occupancy Clause Endorsement, which will enable the City to occupy the facility under construction/renovation during such activity.

D. When a Contract includes the installation of machinery and/or equipment into an existing structure, the above policy must include an endorsement covering same. This includes installation and transit.

E. Automobile liability insurance for owned, no-owned and hired vehicles. The minimum limit of liability carried on such insurance shall be $1,000,000 each accident, combined single limit for bodily injury and property damage.

F. Workers compensation insurance whether or not required by the NH Revised Statutes Annotated, 1955, as amended with statutory coverage and including employer's liability insurance with limits of liability of at least $100,000 each employee and $500,000 per policy year.

G. Any and all deductibles on the above described insurance policies shall be assumed by and be for the ac count of and at the sole risk of Contractor.

H. Insurance companies utilized must be admitted to do business in NH or be on the Insurance Commissioner's list of approved non-admitted companies and shall have a rating of (A) or better, in the current edition of "Best's Key Rating Guide."

I. CONTRACTOR agrees to furnish certificates of the above mentioned insurance to the City of Manchester within fourteen (14) days from the date of this agreement and with respect to the renewals of the current insurance policies, at least thirty (30) days in advance of each renewal date. Such certificates shall name the City of Manchester and the MANCHESTER HIGHWAY DEPARTMENT as an additional insured (does not apply to professional liability) and shall state that in the event of cancellation or material change, written notice shall be given to the City of Manchester, Office of Risk Management, 27 Market St., Manchester, New Hampshire 03101 and the MANCHESTER HIGHWAY DEPARTMENT at least thirty (30) days in advance of such cancellation or change.

J. The purchase of the insurance required or the furnishing of the aforesaid certificate, shall not be a satisfaction of CONTRACTOR'S liability hereunder or in anyway modify the CONTRACTOR'S indemnification responsibilities to the City of Manchester and the MANCHESTER HIGHWAY DEPARTMENT.

K. All subcontractors with respect to this agreement must comport to the same requirements and it will be the responsibility of the Contractor for compliance.

Type of insurance	Limit of liability ($ 0.00)
See Above	See Above

§ 5.3 The Contractor shall obtain an endorsement to its general liability insurance policy to cover the Contractor's obligations under Section 8.12.

§ 5.4 Each party shall provide certificates of insurance showing their respective coverages prior to commencement of the Work.

ARTICLE 6 GENERAL PROVISIONS

§ 6.1 THE CONTRACT

The Contract represents the entire and integrated agreement between the parties and supersedes prior negotiations, representations or agreements, either written or oral. The Contract may be amended or modified only by a written modification in accordance with Article 10.

§ 6.2 THE WORK

The term "Work" means the construction and services required by the Contract Documents, and includes all other labor, materials, equipment and services provided, or to be provided, by the Contractor to fulfill the Contractor's obligations.

§ 6.3 INTENT

The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all.

§ 6.4 OWNERSHIP AND USE OF ARCHITECT'S DRAWINGS, SPECIFICATIONS AND OTHER DOCUMENTS

Documents prepared by the Architect are instruments of the Architect's service for use solely with respect to this Project. The Architect shall retain all common law, statutory and other reserved rights, including the copyright. The Contractor, subcontractors, sub-subcontractors, and material or equipment suppliers are authorized to use and reproduce the instruments of service solely and exclusively for execution of the Work. The instruments of service may not be used for other Projects or for additions to this Project outside the scope of the Work without the specific written consent of the Architect.

ARTICLE 7 OWNER

§ 7.1 INFORMATION AND SERVICES REQUIRED OF THE OWNER

§ 7.1.1 If requested by the Contractor, the Owner shall furnish all necessary surveys and a legal description of the site.

§ 7.1.2 Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, the Owner shall obtain and pay for other necessary approvals, easements, assessments and charges.

§ 7.2 OWNER'S RIGHT TO STOP THE WORK
If the Contractor fails to correct Work which is not in accordance with the Contract Documents, the Owner may direct the Contractor in writing to stop the Work until the correction is made.

§ 7.3 OWNER'S RIGHT TO CARRY OUT THE WORK
If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a seven day period after receipt of written notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies, correct such deficiencies. In such case, the Contract Sum shall be adjusted to deduct the cost of correction from payments due the Contractor.

§ 7.4 OWNER'S RIGHT TO PERFORM CONSTRUCTION AND TO AWARD SEPARATE CONTRACTS
§ 7.4.1 The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and to award separate contracts in connection with other portions of the Project.

§ 7.4.2 The Contractor shall coordinate and cooperate with the Owner's own forces and separate contractors employed by the Owner.

§ 7.4.3 Costs caused by delays or by improperly timed activities or defective construction shall be borne by the party responsible therefor.

ARTICLE 8 CONTRACTOR
§ 8.1 REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS BY CONTRACTOR
§ 8.1.1 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become familiar with local conditions under which the Work is to be performed and correlated personal observations with requirements of the Contract Documents.

§ 8.1.2 The Contractor shall carefully study and compare the Contract Documents with each other and with information furnished by the Owner. Before commencing activities, the Contractor shall (1) take field measurements and verify field conditions; (2) carefully compare this and other information known to the Contractor with the Contract Documents; and (3) promptly report errors, inconsistencies or omissions discovered to the Architect.

§ 8.2 CONTRACTOR'S CONSTRUCTION SCHEDULE
The Contractor, promptly after being awarded the Contract, shall prepare and submit for the Owner's and Architect's information a Contractor's construction schedule for the Work.

§ 8.3 SUPERVISION AND CONSTRUCTION PROCEDURES
§ 8.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for and have control over construction means, methods, techniques, sequences and procedures, and for coordinating all portions of the Work.

§ 8.3.2 The Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner through the Architect the names of subcontractors or suppliers for each portion of the Work. The Contractor shall not contract with any subcontractor or supplier to whom the Owner or Architect have made a timely and reasonable objection.

§ 8.3.3 Where the Contract Documents refer to particular construction means, methods, techniques, sequences or procedures, or indicated or imply that such are to be used on the Work, such mention is intended only to indicate that the operations of the Contractor shall be such as to produce at least the quality of work implies by the operations described, but that the actual determination of whether or not the described operations may be safely and suitable employed on the Work shall be responsibility of the Contractor, who shall notify the Engineer or Architect in writing of the actual means, methods, techniques, sequences or procedures which will be employed on the Work, if these differ from those mentioned in the Contract Documents. All loss, damage or cost of correcting defective work arising from the employment of any construction means, method or techniques, sequences, or procedures shall be borne by the Contractor, notwithstanding that such construction means, methods, techniques, sequences or procedures are referred to, indicated or implied by the Contract Documents, unless the Contractor has given timely notice to the Engineer or Architect in writing that such means, methods, techniques, sequences or procedures are not safe or suitable, and the Contractor has been instructed in writing to proceed at the Owner's risk.

§ 8.4 LABOR AND MATERIALS

§ 8.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work.

§ 8.4.2 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Contract Work. The Contractor shall not permit employment of unfit persons or persons not skilled in tasks assigned to them.

§ 8.4.3 The Contractor shall be responsible for determining that all materials furnished for the Work meet all requirements of the Contract Documents. The Engineer or Architect may require the Contractor to produce reasonable evidence that the material meets such requirements, such as certified reports of past tests by qualified testing laboratories, reports of studies by qualified experts, or other evidence which, in the opinion of the Engineer or Architect, would lead to a reasonable certainty that any material used, or proposed to be used, in the Work meets the requirements of the Contract Documents. All such data shall be furnished at the Contractor's expense. This provision shall not require the Contractor to pay for periodic testing of different batches of the same material unless such testing is specifically required by the Contract Documents to be performed at the Contractor's expense.

§ 8.5 WARRANTY

The Contractor warrants to the Owner and Architect that: (1) materials and equipment furnished under the Contract will be new and of good quality unless otherwise required or permitted by the Contract Documents; (2) the Work will be free from defects not inherent in the quality required or permitted; and (3) the Work will conform to the requirements of the Contract Documents.

§ 8.6 TAXES

The Contractor shall pay sales, consumer, use and similar taxes that are legally required when the Contract is executed.

§ 8.7 PERMITS, FEES AND NOTICES

§ 8.7.1 The Contractor shall obtain and pay for the building permit and other permits and governmental fees, licenses and inspections necessary for proper execution and completion of the Work.

§ 8.7.2 The Contractor shall comply with and give notices required by agencies having jurisdiction over the Work. If the Contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume full responsibility for such Work and shall bear the attributable costs. The Contractor shall promptly notify the Architect in writing of any known inconsistencies in the Contract Documents with such governmental laws, rules and regulations.

§ 8.8 SUBMITTALS

The Contractor shall promptly review, approve in writing and submit to the Architect Shop Drawings, Product Data, Samples and similar submittals required by the Contract Documents. Shop Drawings, Product Data, Samples and similar submittals are not Contract Documents.

§ 8.9 USE OF SITE

The Contractor shall confine operations at the site to areas permitted by law, ordinances, permits, the Contract Documents and the Owner.

§ 8.10 CUTTING AND PATCHING

The Contractor shall be responsible for cutting, fitting or patching required to complete the Work or to make its parts fit together properly.

§ 8.11 CLEANING UP

The Contractor shall keep the premises and surrounding area free from accumulation of debris and trash related to the Work. At the completion of the Work, the Contractor shall remove its tools, construction equipment, machinery and surplus material; and shall properly dispose of waste materials.

§ 8.12 INDEMNIFICATION

To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Architect, Architect's consultants and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, a subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder.

ARTICLE 9 ARCHITECT

§ 9.1 The Architect will provide administration of the Contract as described in the Contract Documents. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

§ 9.2 The Architect will visit the site at intervals appropriate to the stage of construction to become generally familiar with the progress and quality of the Work.

§ 9.3 The Architect will not have control over or charge of, and will not be responsible for, construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the Work, since these are solely the Contractor's responsibility. The Architect will not be responsible for the Contractor's failure to carry out the Work in accordance with the Contract Documents.

§ 9.4 Based on the Architect's observations and evaluations of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor.

§ 9.5 The Architect has authority to reject Work that does not conform to the Contract Documents.

§ 9.6 The Architect will promptly review and approve or take appropriate action upon Contractor's submittals, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents.

§ 9.7 The Architect will promptly interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request from either the Owner or Contractor.

§ 9.8 Interpretations and decisions of the Architect will be consistent with the intent of and reasonably inferable from the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and decisions, the Architect will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either and will not be liable for results of interpretations or decisions rendered in good faith.

§ 9.9 The Architect's duties, responsibilities and limits of authority as described in the Contract Documents shall not be changed without written consent of the Owner, Contractor and Architect. Consent shall not be unreasonably withheld.

ARTICLE 10 CHANGES IN THE WORK

§ 10.1 The Owner, without invalidating the Contract, may order changes in the Work within the general scope of the Contract consisting of additions, deletions or other revisions, the Contract Sum and Contract Time being adjusted accordingly in writing. If the Owner and Contractor can not agree to a change in the Contract Sum, the Owner shall pay the Contractor its actual cost plus reasonable overhead and profit.

10.1.1. In the allowance for overhead and profit combined, included in the total cost to the Owner, shall be base on the following schedule:

1. For the Contractor, for any Work performed by the Contractor's own forces, twelve percent (12%) of the cost.
2. For the Contractor, for Work performed by his Subcontractor, eight percent (8%) of the amount due the Subcontractor.
3. For each Subcontractor of Sub-subcontractor involved, for any Work performed by that Contractor's own forces, twelve percent (12%) of the cost.
4. For each Subcontractor, for Work performed by his Sub-subcontractors eight percent (8%) of the amount due the Sub-subcontractor.
5. In order to facilitate checking of quotations for extras or credits, all proposals, except those so minor that their propriety can be seen by inspection, shall be accompanied by a complete itemization of costs including labor, materials, and Subcontracts. Labor and materials shall be itemized in the manner prescribed above. Where major cost items are Subcontracts, they shall be itemized also. In no case will change involving over $1,000.00 be approved without such itemization.
6. In planning his construction schedule within the agreed upon Contract time, it shall be assumed that the Contractor has anticipated the amount of adverse weather conditions normal to that of Work for the season(s) of the year involved. Only those weather delays attributable to other than normal weather conditions will be considered by the Owner and Engineer or Architect.

§ 10.2 The Architect will have authority to order minor changes in the Work not involving changes in the Contract Sum or the Contract Time and not inconsistent with the intent of the Contract Documents. Such orders shall be in writing and shall be binding on the Owner and Contractor. The Contractor shall carry out such orders promptly.

§ 10.3 If concealed or unknown physical conditions are encountered at the site that differ materially from those indicated in the Contract Documents or from those conditions ordinarily found to exist, the Contract Sum and Contract Time shall be subject to equitable adjustment.

ARTICLE 11 TIME

§ 11.1 Time limits stated in the Contract Documents are of the essence of the Contract.

§ 11.2 If the Contractor is delayed at any time in progress of the Work by changes ordered in the Work, or by labor disputes, fire, unusual delay in deliveries, unavoidable casualties or other causes beyond the Contractor's control, the Contract Time shall be subject to equitable adjustment.

ARTICLE 12 PAYMENTS AND COMPLETION

§ 12.1 CONTRACT SUM

The Contract Sum stated in the Agreement, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

§12.1.1 Until final payment, the Owner will pay ninety percent (90%) of the amount due the Contractor on account of Progress Payments.

§ 12.2 APPLICATIONS FOR PAYMENT See Article 4

.

§ 12.2.1 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment, all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information and belief, be free and clear of liens, claims, security interests or other encumbrances adverse to the Owner's interests.

§ 12.3 CERTIFICATES FOR PAYMENT

The Architect or owner will, within seven days after receipt of the Contractor's Application for Payment, either issue to the Owner a Certificate for Payment, with a copy to the Contractor, for such amount as the Architect determines is properly due, or notify the Contractor and Owner in writing of the Architect's reasons for withholding certification in whole or in part.

§ 12.4 PROGRESS PAYMENTS

§ 12.4.1 After the Architect has issued a Certificate for Payment, the Owner shall make payment in the manner provided in the Contract Documents.

§ 12.4.2 The Contractor shall promptly pay each subcontractor and supplier, upon receipt of payment from the Owner, an amount determined in accordance with the terms of the applicable subcontracts and purchase orders.

§ 12.4.3 Neither the Owner nor the Architect shall have responsibility for payments to a subcontractor or supplier.

§ 12.4.4 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the requirements of the Contract Documents.

§ 12.5 SUBSTANTIAL COMPLETION

§ 12.5.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so the Owner can occupy or utilize the Work for its intended use.

§ 12.5.2 When the Work or designated portion thereof is substantially complete, the Architect will make an inspection to determine whether the Work is substantially complete. When the Architect determines that the Work is substantially complete the Architect shall prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion, shall establish the responsibilities of the Owner and Contractor, and shall fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

§ 12.6 FINAL COMPLETION AND FINAL PAYMENT

§ 12.6.1 Upon receipt of a final Application for Payment, the Architect will inspect the Work. When the Architect finds the Work acceptable and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment.

§ 12.6.2 Final payment shall not become due until the Contractor submits to the Architect releases and waivers of liens, and data establishing payment or satisfaction of obligations, such as receipts, claims, security interests or encumbrances arising out of the Contract.

§ 12.6.3 Acceptance of final payment by the Contractor, a subcontractor or material supplier shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

ARTICLE 13 PROTECTION OF PERSONS AND PROPERTY

The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs, including all those required by law in connection with performance of the Contract. The Contractor shall take reasonable precautions to prevent damage, injury or loss to employees on the Work, the Work and materials and equipment to be incorporated therein, and other property at the site or adjacent thereto. The Contractor shall promptly remedy damage and loss to property caused in whole or in part by the Contractor, or by anyone for whose acts the Contractor may be liable.

ARTICLE 14 CORRECTION OF WORK

§ 14.1 The Contractor shall promptly correct Work rejected by the Architect as failing to conform to the requirements of the Contract Documents. The Contractor shall bear the cost of correcting such rejected Work, including the costs of uncovering, replacement and additional testing.

§ 14.2 In addition to the Contractor's other obligations including warranties under the Contract, the Contractor shall, for a period of one year after Substantial Completion, correct work not conforming to the requirements of the Contract Documents.

§ 14.3 If the Contractor fails to correct nonconforming Work within a reasonable time, the Owner may correct it in accordance with Section 7.3.

ARTICLE 15 MISCELLANEOUS PROVISIONS

§ 15.1 ASSIGNMENT OF CONTRACT

Neither party to the Contract shall assign the Contract as a whole without written consent of the other.

§ 15.2 TESTS AND INSPECTIONS

§ 15.2.1 At the appropriate times, the Contractor shall arrange and bear cost of tests, inspections and approvals of portions of the Work required by the Contract Documents or by laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities.

§ 15.2.2 If the Architect requires additional testing, the Contractor shall perform those tests.

§ 15.2.3 The Owner shall bear cost of tests, inspections or approvals that do not become requirements until after the Contract is executed.

§ 15.3 GOVERNING LAW

The Contract shall be governed by the law of the place where the Project is located.

15.4 When substitution of a material, system or method of construction is duly approved, but such substitution requires modifications in the Contract Documents, whether relative to that time or to related work, the cost of making the modification shall be borne by the Contractor.

15.5 If such substitution requires additional cost in the work of related trades, the Contractor shall bear the cost without penalizing the Owner in any way.

ARTICLE 16 TERMINATION OF THE CONTRACT

§ 16.1 TERMINATION BY THE CONTRACTOR

If the Architect fails to certify payment as provided in Section 12.3 for a period of 30 days through no fault of the Contractor, or if the Owner fails to make payment as provided in Section 12.4.1 for a period of 30 days, the Contractor may, upon seven additional days' written notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed including reasonable overhead and profit, and costs incurred by reason of such termination.

§ 16.2 TERMINATION BY THE OWNER FOR CAUSE

§ 16.2.1 The Owner may terminate the Contract if the Contractor

.1 repeatedly refuses or fails to supply enough properly skilled workers or proper materials;

.2 fails to make payment to subcontractors for materials or labor in accordance with the respective agreements between the Contractor and the subcontractors;

.3 persistently disregards laws, ordinances, or rules, regulations or orders of a public authority having jurisdiction; or

.4 is otherwise guilty of substantial breach of a provision of the Contract Documents.

§ 16.2.2 When any of the above reasons exist, the Owner, after consultation with the Architect, may without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' written notice, terminate employment of the Contractor and may

.1 take possession of the site and of all materials thereon owned by the Contractor, and

.2 finish the Work by whatever reasonable method the Owner may deem expedient.

§ 16.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 16.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

§ 16.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, such excess shall be paid to the Contractor. If such costs exceed the unpaid balance, the Contractor shall pay the difference to the Owner. This obligation for payment shall survive termination of the Contract.

§ 16.3 TERMINATION BY THE OWNER FOR CONVENIENCE

The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause. The Contractor shall be entitled to receive payment for Work executed, and costs incurred by reason of such termination, along with reasonable overhead and profit on the Work not executed.

ARTICLE 17 OTHER TERMS AND CONDITIONS

(Insert any other terms or conditions below.)

6.1 The Contract may be terminated by the Owner or the Contractor as provided in Article 11 of AIA Document A105-2007 as modified by the City.

6.2 The work may be suspended by the Owner as provided in Article 11 of AIA Document A105-2007.

This Agreement entered into as of the day and year first written above.
(If required by law, insert cancellation period, disclosures or other warning statements above the signatures.)

CITY OF MANCHESTER
(SEAL)

Public Works Director
DEPARTMENT OF HIGHWAYS

By_____
Kevin Sheppard, P.E.

Signed and sealed in
presence of:

_____ _____
Date

_____
CONTRACTOR
(SEAL)

By:_____

Title:_____

_____
Federal I.D. No.

AIA® Document G702™ – 1992

Application and Certificate for Payment

TO OWNER:		PROJECT:		APPLICATION NO: 001	Distribution to:
					OWNER:
				PERIOD TO:	ARCHITECT:
				CONTRACT FOR: General Construction	CONTRACTOR:
FROM CONTRACTOR:		VIA ARCHITECT:		CONTRACT DATE:	FIELD:
				PROJECT NOS: / /	:

CONTRACTOR'S APPLICATION FOR PAYMENT

Application is made for payment, as shown below, in connection with the Contract.
Continuation Sheet, AIA Document G703, is attached.

1. ORIGINAL CONTRACT SUM			$0.00
2. NET CHANGE BY CHANGE ORDERS			$0.00
3. CONTRACT SUM TO DATE (Line 1 ± 2)			$0.00
4. TOTAL COMPLETED & STORED TO DATE (Column G on G703)			$0.00
5. RETAINAGE:			
a. 0 % of Completed Work (Column D + E on G703:	$0.00	)= $0.00	
b. 0 % of Stored Material (Column F on G703:	$0.00	)= $0.00	
Total Retainage (Lines 5a + 5b or Total in Column I of G703)			$0.00
6. TOTAL EARNED LESS RETAINAGE (Line 4 Less Line 5 Total)			$0.00
7. LESS PREVIOUS CERTIFICATES FOR PAYMENT (Line 6 from prior Certificate)			$0.00
8. CURRENT PAYMENT DUE			$0.00
9. BALANCE TO FINISH, INCLUDING RETAINAGE (Line 3 less Line 6)		$0.00	

CHANGE ORDER SUMMARY	ADDITIONS	DEDUCTIONS
Total changes approved in previous months by Owner	$0.00	$0.00
Total approved this Month	$0.00	$0.00
TOTALS	$0.00	$0.00
NET CHANGES by Change Order		$0.00

The undersigned Contractor certifies that to the best of the Contractor's knowledge, information and belief the Work covered by this Application for Payment has been completed in accordance with the Contract Documents, that all amounts have been paid by the Contractor for Work for which previous Certificates for Payment were issued and payments received from the Owner, and that current payment shown herein is now due.

CONTRACTOR:

By: _____ Date: _____

State of:

County of:

Subscribed and sworn to before me this day of

Notary Public:

My Commission expires:

ARCHITECT'S CERTIFICATE FOR PAYMENT

In accordance with the Contract Documents, based on on-site observations and the data comprising this application, the Architect certifies to the Owner that to the best of the Architect's knowledge, information and belief the Work has progressed as indicated, the quality of the Work is in accordance with the Contract Documents, and the Contractor is entitled to payment of the AMOUNT CERTIFIED.

AMOUNT CERTIFIED $0.00

(Attach explanation if amount certified differs from the amount applied. Initial all figures on this Application and on the Continuation Sheet that are changed to conform with the amount certified.)

ARCHITECT:

By: _____ Date: _____

This Certificate is not negotiable. The AMOUNT CERTIFIED is payable only to the Contractor named herein. Issuance, payment and acceptance of payment are without prejudice to any rights of the Owner or Contractor under this Contract.

DRAFT

AIA® Document G701™ – 2001

Change Order

PROJECT *(Name and address)*:
Manchester, NH

TO CONTRACTOR *(Name and address)*:

CHANGE ORDER NUMBER: 001
DATE:

ARCHITECT'S PROJECT NUMBER:
CONTRACT DATE:
CONTRACT FOR: General Construction

OWNER: ☐
ARCHITECT: ☐
CONTRACTOR: ☐
FIELD: ☐
OTHER: ☐

THE CONTRACT IS CHANGED AS FOLLOWS:
(Include, where applicable, any undisputed amount attributable to previously executed Construction Change Directives)

The original Contract Sum was	$	0.00
The net change by previously authorized Change Orders	$	0.00
The Contract Sum prior to this Change Order was	$	0.00
The Contract Sum will be increased by this Change Order in the amount of	$	0.00
The new Contract Sum including this Change Order will be	$	0.00

The Contract Time will be increased by Zero (0) days.
The date of Substantial Completion as of the date of this Change Order therefore is

NOTE: This Change Order does not include changes in the Contract Sum, Contract Time or Guaranteed Maximum Price which have been authorized by Construction Change Directive until the cost and time have been agreed upon by both the Owner and Contractor, in which case a Change Order is executed to supersede the Construction Change Directive.

NOT VALID UNTIL SIGNED BY THE ARCHITECT, CONTRACTOR AND OWNER.

ARCHITECT *(Firm name)*	CONTRACTOR *(Firm name)*	OWNER *(Firm name)*
ADDRESS	ADDRESS	ADDRESS
BY *(Signature)*	BY *(Signature)*	BY *(Signature)*
(Typed name)	*(Typed name)*	*(Typed name)*
DATE	DATE	DATE

SECTION 01100

SUMMARY OF WORK

PART 1 GENERAL

1.01 1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This Section includes the following:
   1. Work covered by the Contract Documents.
   2. Type of the Contract.
   3. Use of premises.
   4. Owner's occupancy requirements.
   5. Work restrictions.
   6. Specification formats and conventions.
   7. Work under other contracts.

1.03 WORK COVERED BY CONTRACT DOCUMENTS

A. Project Identification: Greenhouse Reglazing, MST School
   1. Project Location: 530 South Porter, Manchester, New Hampshire.

B. Owner: City of Manchester, New Hampshire, 275 Clay Street, Manchester, New Hampshire 03103-5613.
   1. Owner's Representative: Eric Krueger.
   2. Owner's Representatives duties include:
      a. Administer construction contracts.
      b. Establish and maintain coordination procedures.
      c. Develop, implement, monitor and expedite procedures for submittals, change orders, information requests, progress payments and approvals.
      d. Monitor compliance with labor standards outlined in the construction Contractor's contract
      e. Conduct periodic job site visits to review progress, discuss/resolve problems and coordinate work
      f. Maintain records and submit routine reports to the Owner.
      g. Contract Industrial Hygienist firm to monitor air quality during the ACBM Glazing removal and Disposal. By Owner
      h. Monitor Contractor's performance for adherence to contract procedures, schedules and technical requirements and provide written reports
      i. Advise the Owner on issues related to staging, planning and sequencing, handling/storage of materials, etc.
      j. Provide cost control through progress payment review and verification according to the approved schedule and budget.
      k. Provide claims control by documentation, prompt disposition, fact finding and negotiation and assist the Owner in the resolution of any claims.

C. The Work consists of the following: and per the construction drawings and documents enclosed in this
      1. Mobilization.
      2. Proper removal and disposal of existing glazing system containing ACBM.
      3. Engineered system of polycarbonate panel and installation per drawings and or sketch’s.
      4. Cleanup and demobilization.
      5. Site Safety/Security

1.04 TYPE OF CONTRACT

A. Project will be constructed under a single prime contract. General Contractor is required to carry Asbestos Removal and Glazing demo contractors.

1.05 WORK UNDER OTHER CONTRACTS

A. General: Cooperate fully with separate contractors so work on those contracts may be carried out smoothly, without interfering with or delaying work under this Contract. Coordinate the Work of this Contract with work performed under separate contracts.

B. Separate Contract: The Owner reserves the right to perform construction operations at the site. Those operations may be conducted simultaneously with work under this Contract. No specific projects are planned at this time.

1.06 USE OF PREMISES

A. General: Contractor shall have full use of premises for construction operations, including use of Project site, during construction period.

B. Contractor is responsible for safety on the job site at all times. Contractor shall take the appropriate actions to assure the areas of construction are secured from the public. Contractor shall construct and/or install temporary fencing, signs and barricades as required to assure a safe and secure environment. Proper barricading of work area is a requirement, to protect people and City property.

C. Contractor equipment suitable for use intended.
   1. Self-Contained Toilet Units: Single-occupant units of chemical, aerated recirculation, or combustion type; vented; fully enclosed with a glass-fiber-reinforced polyester shell or similar nonabsorbent material.

D. Contractor's staging/lay down areas are to be coordinated through the Facilities Manager. The area shall inside the greehouse at the site. The Contractor is responsible for obtaining any and all permits and satisfying all requirements for accessing the City streets from the site. Contractor shall coordinate with the local authorities. Contractor is responsible for repairing any damage to staging/lay down area. Contractor shall not place trailers, equipment, lay down, storage facilities outside of project site after normal working hours. Contractor shall have no vehicles, trailers, storage containers in any fire lanes or prohibited areas.

1.07 OWNER'S OCCUPANCY REQUIREMENTS

A. Contractor shall not restrict the owner's access to the buildings entrances area. If, the Contractor should need to temporarily restrict the owner's access to any areas, the Contractor shall submit a written notice to the owner 24 hours in advance of access restriction.

1.08 WORK RESTRICTIONS

A. On-Site Work Hours: Work shall be generally performed during normal business working hours of 7:00 a.m. to 6:00 p.m., Monday through Friday, except otherwise indicated.

B. Contractor shall maintain public street access at all times. Contractor shall provide flagmen as necessary to provide a safe and secure environment for the protection of all passersby anytime construction related vehicles move on, off or around the site.

C. Contractor shall maintain work areas in an orderly condition and will be responsible for clean-up and removal of debris to the dumpster on a daily basis. If, in the opinion of the Program Manager or Owner, clean-up is not being performed satisfactorily, the Program Manager shall, after 24 hours of having notified the Contractor of the same, have the work performed by others and all charges incurred thereby deducted from the next progress payment of the Contractor.

D. Use of the Site: Limit use of the premises to work in areas indicated. Confine operations to areas where work is directly being performed. Do not disturb portions of the site beyond the areas in which the Work is indicated.

E. Site Enclosure Fence: Not Required unless it is determined by the City of Manchester that proper barricading is required to accommodate construction operations. Install in a manner that will prevent people, from easily entering site except by entrance gates.

1.09 PHASING PLAN

A. The Contractor shall develop and prepare a phasing plan, for acceptance and approval by the Owner and the Owner. The Contractor shall utilize the following listed requirements in developing the plan. The Contractor's Phasing Plan will include provisions for ensuring the facility and administration areas are safe.
   1. The Contractor shall be responsible for all costs to ensure the existing systems (HVAC, utilities, Fire Alarm, life safety, security, hot & cold water service and treatment, etc.) remain in service while the new systems are installed according to the phasing requirements. All additional equipment and materials (panels, fuses, breakers, conduit, piping, wiring, connectors, fixtures, valves, labor, etc.) required to maintain the existing services are the responsibility of the Contractor. The Owner shall not pay for any materials or equipment to maintain the existing services.
   3. The school shall be made available to the Contractor for inspection to review the current systems and construction. Coordinate and schedule all owner inspections through the Owner. Contractor shall be responsible for all existing conditions, with the only exception of hidden conditions not visible by inspection or outlined in the general conditions, record documents, plans or specifications. Failure to field investigate the school may be considered a breach of contract.
   4. Phased work shall not commence until the Owner is assured in writing that materials are available to complete the current phase. The Owner, must specifically approve any exceptions in writing.
   5. Contractor shall maintain student access to all buildings in use by the School. Contractor shall construct safe and secure temporary barricade enclosures where students pass through construction areas (if any). Contractors shall maintain adequate and clearly marked fire exits, to be approved by Fire Marshall. If requested, the Contractor shall submit drawings indicating egress paths from the building. Contractor shall install all required barricades and signs.
   6. The Contractor is required to remove and dispose of all Contractor-installed temporary utilities as soon as they are no longer needed.
   7. The Contractor shall maintain work areas in a broom-clean and orderly condition and will be responsible for clean-up and removal of debris to the dumpster on a daily basis. If, in the opinion of the Owner, clean-up is not being performed satisfactorily, the Owner shall, after 24 hours of having notified the Contractor of the same, have the work performed by others and all charges incurred thereby deducted from the next progress payment of the Contractor. For work conducted during school occupation all clean-up, required to restore site to same level of cleanliness as area was prior to construction activities, will be conducted immediately and/or prior to return of students to the school (i.e. -start of school day). Contractor will coordinate work with Owner's cleaning staff to ensure orderly flow of work. Any area not cleaned prior to student occupation will be cleaned immediately by owner whose work will be charged to the contractor. Repeated/frequent infringements upon this policy may be considered a breach of contract. Damage to the existing school due to either equipment/material storage or movement will be the sole responsibility of the contractor.
   8. When conflicts arise between the phasing notes and the general conditions, plans or specifications, at the determination of the Owner, the most stringent shall apply.
   9. The contractor will be restricted from working in occupied corridors during school hours. Contractor will have access, and use of premises during normal working hours, as long as

the activities do not disrupt the school activities and operations. Coordination with school activities will, however, still be required. The Owner will make every effort to accommodate work at any time and in any location. The Contractor shall be bound to work areas as outlined on the Phasing Plan and Contractor's Construction Schedule.

10. All Contractor deliveries shall be coordinated and scheduled with the Owner and will be subject to school operational requirements.
11. Contractor shall repair all damage caused by construction operations immediately. Take all precautions necessary to protect the building and its occupants during the construction period.
12. Contractor shall relocate the school furnishings as required to complete the requirements of the contract documents. Furnishings will be relocated by the contractor to contractor provided storage facilities on site, if arrangements for internal storage cannot be agreed upon. Storage facilities shall be secure and weather-tight. Furnishings approved not to be removed from the area of construction shall be protected from damage by means approved by the Owner, through the Program Manager. Furnishings shall be described as any article, equipment, furniture, etc. not permanently fixed in the building. School staff will be responsible for boxing any and all "loose" items. Contractor shall inventory quantity of boxes, furniture, equipment, etc. and note any damage prior to relocating. Inventory sheets shall be submitted to the Program Manager for acceptance. Inventory sheets shall be marked off and resubmitted for acceptance after final relocation of items. Contractor shall be held responsible for lost or damaged items. All school furnishings to be stored in exterior storage trailers or other exterior storage containers should be cleaned with a disinfectant solution prior to returning stored materials to the school buildings.
13. The Substantial completion and Final completion dates shall be utilized for determining Liquidated Damages. Contractor will refer to the Contract Section for reference and description of Liquidated Damages. Any delays in completing the work as described by the Substantial or Final dates reflected below will result in Liquidated Damages being accessed. Final completion shall occur no later than 30 days after substantial completion. All schedules will include at a minimum dates for the following Milestones:

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01600 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Candidates are directed to design, provide and install identical and congruous systems and products (where feasible) throughout all buildings to facilitate ease of maintenance and replacement parts and services. This applies to all mechanical, plumbing and electrical systems as well as furniture, fixtures, finishes and equipment.

B. This Section includes the following administrative and procedural requirements: selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; product substitutions; and comparable products.

C. Related Sections include the following:

1. Division 1 Section "Allowances" for products selected under an allowance.
2. Division 1 Section "Alternates" for products selected under an alternate.
3. Division 1 Section "References" for applicable industry standards for products specified.
4. Division 1 Section "Closeout Procedures" for submitting warranties for contract closeout.
5. Divisions 2 through 16 Sections for specific requirements for warranties on products and installations specified to be warranted.

1.3 DEFINITIONS

A. Products: Items purchased for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.

1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation, shown or listed in manufacturer's published product literature, that is current as of date of the Contract Documents.
2. New Products: Items that have not previously been incorporated into another project or facility and of recent manufacture. Products salvaged or recycled from other projects are not considered new products.
3. Comparable Product: Product that is demonstrated and approved through submittal process, or where indicated as a product substitution, to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.

B. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.

C. Basis-of-Design Product Specification: Where a specific manufacturer's product is named and accompanied by the words "basis of design," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of other named manufacturers.

D. Manufacturer's Warranty: Preprinted written warranty published by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.

E. Special Warranty: Written warranty required by or incorporated into the Contract Documents, either to extend time limit provided by manufacturer's warranty or to provide more rights for Owner.

1.4 SUBMITTALS

A. Product List: Submit a list, in tabular from, showing specified products. Include generic names of products required. Include manufacturer's name and proprietary product names for each product.

1. Coordinate product list with Contractor's Construction Schedule and the Submittals Schedule.
2. Form: Tabulate information for each product under the following column headings:

    a. Specification Section number and title.
    b. Generic name used in the Contract Documents.
    c. Proprietary name, model number, and similar designations.
    d. Manufacturer's name and address.
    e. Supplier's name and address.
    f. Installer's name and address.
    g. Projected delivery date or time span of delivery period.
    h. Identification of items that require early submittal approval for scheduled delivery date.
    i. Description of location(s) where product is intended for use.

3. Prior to the commencement of the Work, submit 5 copies of completed product list. Include a written explanation for omissions of data and for variations from Contract requirements.
4. Owner’s Action: Owner will respond in writing to Contractor within 30 days of receipt of completed product list. Owner’s response will include a list of unacceptable product selections and a brief explanation of reasons for this action. Owner’s response, or lack of response, does not constitute a waiver of requirement that products comply with the Contract Documents.

B. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

1. Substitution Request Form
2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:

    a. Statement indicating why specified material or product cannot be provided.
    b. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by Owner and separate contractors, that will be necessary to accommodate proposed substitution.
    c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Provide a spreadsheet specifically comparing all specified features and qualities with those proposed. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
    d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
    e. Samples, where applicable or requested.
    f. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
    g. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
    h. Research/evaluation reports evidencing compliance with building code in effect for Project, from a model code organization acceptable to authorities having jurisdiction.
    i. Detailed comparison of Contractor's Construction Schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating lack of availability or delays in delivery.
    j. Cost information, including a proposal of change, if any, in the Contract Sum.
    k. Contractor's certification that proposed substitution complies with requirements in the Contract Documents and is appropriate for applications indicated.
    l. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.

3. Owner’s Action: If necessary, Owner will request additional information or documentation for evaluation within one week of receipt of a request for substitution. Owner will notify Contractor of acceptance or rejection of proposed substitution within 10 days of receipt of request, or 7 days of receipt of additional information or documentation, whichever is later.

    a. Form of Acceptance: Change Order.
    b. Use product specified if Owner cannot make a decision on use of a proposed substitution within time allocated.

C. Basis-of-Design Product Specification Submittal: Comply with requirements in Division 1 Section "Submittal Procedures." Show compliance with requirements.

D. Refer to General Conditions, section 3.4.6 and 3.4.7 for further requirements relative to product substitution.

1.5 QUALITY ASSURANCE

A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, product selected shall be compatible with products previously selected, even if previously selected products were also options.

1. Each contractor is responsible for providing products and construction methods compatible with products and construction methods of other contractors.
2. If a dispute arises between contractors over concurrently selectable but incompatible products, Owner will determine which products shall be used.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft. Comply with manufacturer's written instructions.

1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
4. Inspect products on delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.
5. Store products to allow for inspection and measurement of quantity or counting of units.
6. Store materials in a manner that will not endanger Project structure.
7. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
8. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
9. Protect stored products from damage.

B. Storage: Provide a secure location and enclosure at Project site for storage of materials and equipment by Owner's construction forces. Coordinate location with Owner.

1.7 PRODUCT WARRANTIES

A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.

B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution. Submit a draft for approval before final execution.

1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.

2. Specified Form: Forms are included with the Specifications. Prepare a written document using appropriate form properly executed.
3. Refer to Divisions 2 through 16 Sections for specific content requirements and particular requirements for submitting special warranties.

C. Submittal Time: Comply with requirements in Division 1 Section "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT OPTIONS

A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged, and unless otherwise indicated, that are new at time of installation.

1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
4. Where products are accompanied by the term "as selected," Owner will make selection.
5. Where products are accompanied by the term "match sample," sample to be matched is Owner’s.
6. Descriptive, performance, and reference standard requirements in the Specifications establish "salient characteristics" of products.
7. Or Equal: Where products are specified by name and accompanied by the term "or equal" or "or approved equal" or "or approved," comply with provisions in "Comparable Products" Article to obtain approval for use of an unnamed product.

B. Product Selection Procedures: Procedures for product selection include the following:

1. Product: Where Specification paragraphs or subparagraphs titled "Product" name a single product and manufacturer, provide the product named.

2. Manufacturer/Source: Where Specification paragraphs or subparagraphs titled "Manufacturer" or "Source" name single manufacturers or sources, provide a product by the manufacturer or from the source named that complies with requirements.

3. Products: Where Specification paragraphs or subparagraphs titled "Products" introduce a list of names of both products and manufacturers, provide one of the products listed that complies with requirements.

4. Manufacturers: Where Specification paragraphs or subparagraphs titled "Manufacturers" introduce a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements.

5. Available Products: Where Specification paragraphs or subparagraphs titled "Available Products" introduce a list of names of both products and manufacturers, provide one of

the products listed or another product that complies with requirements. Comply with provisions in "Comparable Products" Article to obtain approval for use of an unnamed product.

6. Available Manufacturers: Where Specification paragraphs or subparagraphs titled "Available Manufacturers" introduce a list of manufacturers' names, provide a product by one of the manufacturers listed or another manufacturer that complies with requirements. Comply with provisions in "Comparable Products" Article to obtain approval for use of an unnamed product.
7. Product Options: Where Specification paragraphs titled "Product Options" indicate that size, profiles, and dimensional requirements on Drawings are based on a specific product or system, provide either the specific product or system indicated or a comparable product or system by another manufacturer. Comply with provisions in "Product Substitutions" Article.
8. Basis-of-Design Products: Where Specification paragraphs or subparagraphs titled "Basis-of-Design Product**s**" are included and also introduce or refer to a list of manufacturers' names, provide either the specified product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with provisions in "Comparable Products" Article to obtain approval for use of an unnamed product.

9. Visual Matching Specification: Where Specifications require matching an established Sample, select a product (and manufacturer) that complies with requirements and matches Owner’s sample. Owner’s decision will be final on whether a proposed product matches satisfactorily.

    a. If no product available within specified category matches satisfactorily and complies with other specified requirements, comply with provisions of the Contract Documents on "substitutions" for selection of a matching product.

10. Visual Selection Specification: Where Specifications include the phrase "as selected from manufacturer's colors, patterns, textures" or a similar phrase, select a product (and manufacturer) that complies with other specified requirements.

    a. Standard Range: Where Specifications include the phrase "standard range of colors, patterns, textures" or similar phrase, Architect, upon approval by Owner,will select color, pattern, or texture from manufacturer's product line that does not include premium items.
    b. Full Range: Where Specifications include the phrase "full range of colors, patterns, textures" or similar phrase, Architect, upon approval by Owner, will select color, pattern, or texture from manufacturer's product line that includes both standard and premium items.

11. Allowances: Refer to individual Specification Sections and "Allowance" provisions in Division 1 for allowances that control product selection and for procedures required for processing such selections.

2.2 PRODUCT SUBSTITUTIONS

A. Timing: Owner will consider requests for substitution if received prior commencement of the Work. Requests received after that time may be considered or rejected at discretion of Owner.

B. Conditions: Owner will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Owner, through Program Manager, will return requests without action, except to record noncompliance with these requirements. Refer to General Conditions, section 3.4.6 and 3.4.7 for further requirements relative to product substitution.

1. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Program Manager for evaluation services, increased cost of other construction by Owner, and similar considerations.
2. Requested substitution does not require extensive revisions to the Contract Documents.
3. Requested substitution is consistent with the Contract Documents and will produce indicated results.
4. Substitution request is fully documented and properly submitted.
5. Requested substitution will not adversely affect Contractor's Construction Schedule.
6. Requested substitution has received necessary approvals of authorities having jurisdiction.
7. Requested substitution is compatible with other portions of the Work.
8. Requested substitution has been coordinated with other portions of the Work.
9. Requested substitution provides specified warranty.
10. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

2.3 COMPARABLE PRODUCTS

A. Where products or manufacturers are specified by name, submit the following, in addition to other required submittals, to obtain approval of an unnamed product:

1. Evidence that the proposed product does not require extensive revisions to the Contract Documents, that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
3. Evidence that proposed product provides specified warranty.
4. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.
5. Samples, if requested.

PART 3 - EXECUTION (Not Used)

END OF SECTION 01600

SECTION 01770 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:

1. Inspection procedures.
2. Warranties.
3. Final cleaning.

B. Related Sections include the following:

1. Division 1 Section "Payment Procedures" for requirements for Applications for Payment for Substantial and Final Completion.
2. Division 1 Section "Construction Progress Documentation" for submitting Final Completion construction photographs and negatives.
3. Division 1 Section "Photographic Documentation" for submitting Final Completion construction photographs and negatives.
4. Division 1 Section "Execution Requirements" for progress cleaning of Project site.
5. Division 1 Section "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
6. Division 1 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
7. Division 1 Section "Demonstration and Training" for requirements for instruction of Owner's personnel.
8. Divisions 2 through 16 Sections for specific closeout and special cleaning requirements for products of those Sections.

1.3 SUBSTANTIAL COMPLETION

A. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete in request.

1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
2. Advise Owner of pending insurance changeover requirements.
3. Submit copies of specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents for approval prior to final submission.

4. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
5. Prepare and submit Project Record Documents, operation and maintenance manuals, Final Completion construction photographs and photographic negatives, damage or settlement surveys, property surveys, and similar final record information.
6. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.
7. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
8. Complete startup testing of systems.
9. Submit test/adjust/balance records.
10. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
11. Advise Owner of changeover in heat and other utilities.
12. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
13. Complete final cleaning requirements, including touchup painting.
14. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

B. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, Owner, through Program Manager will either proceed with inspection or notify Contractor of unfulfilled requirements. Owner, through Program Manager will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Owner, through Program Manager, that must be completed or corrected before certificate will be issued.

1. Re-inspection: Request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected.
2. Results of completed inspection will form the basis of requirements for Final Completion.

1.4 FINAL COMPLETION

A. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following:

1. Submit a final Application for Payment according to Division 1 Section "Payment Procedures."
2. Submit certified copy of Program Manager's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Program Manager. The certified copy of the list shall state that each item has been completed.
3. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
4. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training videotapes.

B. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, Owner, through Program Manager will either proceed with inspection or notify Contractor of

unfulfilled requirements. Owner, through Program Manager will certify final Application for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Re-inspection: Request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.5 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Preparation: Submit three copies of list. Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.

1. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor.
2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
3. Include the following information at the top of each page:

    a. Facility and Project name.
    b. Date.
    c. Name of Contractor.
    d. Page number.

1.6 WARRANTIES

A. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.

1. Bind warranties and bonds in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch (115-by-280-mm) paper.
2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Facility and Project name, and name of Contractor.

B. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 FINAL CLEANING

A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and anti-pollution regulations.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturers written instructions.

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a portion of Project:

a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
d. Remove tools, construction equipment, machinery, and surplus material from Project site.
e. Remove snow and ice to provide safe access to building.
f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
h. Sweep concrete floors broom clean in unoccupied spaces.
i. Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain.
j. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
k. Remove labels that are not permanent.
l. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.

1) Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.

m. Wipe surfaces of mechanical and electrical equipment, elevator equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
n. Replace parts subject to unusual operating conditions.

o. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
p. Clean ducts, blowers, and coils if units are dirty or were operated without filters during construction.
q. Leave Project clean and ready for occupancy.

C. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

END OF SECTION 01770

SECTION 02081 – HAZARDOUS MATERIALS AWARENESS

1.1 CONTRACT REFERENCES

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all sections within DIVISION 1 – GENERAL REQUIREMENTS that are hereby made a part of this Section.

1.2 DESCRIPTION

A. This section provides information on key components of the Work relating to asbestos awareness. Additional details for the Work are presented in the Specifications and the Attachments.

1.3 SECTION INCLUDES

A. Related Requirements and Sections
B. Asbestos Survey Results
C. Definitions
D. Description of Work
E. Provisions of Work
F. Submittals
G. Training and Qualifications
H. Regulatory Submittals
I. Safety Considerations
J. Security
K. References
L. Materials and Equipment
M. General Considerations
N. Disposal of Waste
O. Housekeeping
P. Quality Control
Q. Personal Protection

1.4 RELATED REQUIREMENTS AND SECTIONS

A. Coordinate work with that of all other trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

1.5 ASBESTOS SURVEY RESULTS

A. The attached Asbestos materials Sampling report shows the existing caulking/ glazing compound has been identified to contain >5% asbestos. ACBM's are known to exist within the renovation project area, OSHA requirements under 29 CFR 1926.1101 require the communication of the potential hazard of working with asbestos and outline work practices regardless of the potential level of exposure. The contractor is responsible for the review of the attached Asbestos materials sampling report dated 2-7-2012.

1.6 DEFINITIONS

A. ACM – Asbestos-Containing Material – Any material or product containing more than one percent asbestos.

B. Adequately Wet – Adequately Wet means sufficiently mixed or penetrated with liquid to prevent the release of particulates. If visible emissions are observed coming from asbestos-containing material, then that material has not been adequately wetted. However, the absence of visible emissions is not sufficient evidence of being adequately wet.

C. Air Monitoring – The process of measuring the fiber content of a specific volume of air.

D. Amended Water – Water to which a surfactant has been added for use in wetting ACM to control asbestos fibers.

E. Asbestos – Chrysotile, amosite, crocidolite, tremolite asbestos, anthophyllite asbestos, actinolite asbestos and any of these minerals that has been chemically treated and / or altered.

F. Asbestos Hazard Emergency Response Act (AHERA) – An EPA regulation published in the October 30, 1987 Federal Register covering asbestos-containing materials in schools; AHERA requires local education agencies to identify ACBM in their school buildings, develop an asbestos management plan and implement this plan. An Operation and Maintenace program is one permitted response action, where appropriate.

G. Breathing Zone – A hemisphere forward of the shoulders with a radius of approximately 6" to 9".

H. Confined Space – A space that has limited openings for entry and exit, unfavorable natural ventilation and / or a space not designed for continuous worker occupancy. Examples include boilers, furnaces, pits, septic tanks, manholes, silas and utility vaults.

I. Designee – Appointed representative to act on the Owner's behalf.

J. EPA – U.S. Environmental Protection Agency

K. Excursion Limit (EL) – The OSHA term used to define a maximum airborne concentration of asbestos in fibers per cubic centimeter as averaged over a sampling period of thirty minutes.

L. HEPA Filter – High-Efficiency Particulate Air Filter. Such filters are rated to trap at least 99.97% of all particles 0.3 microns (0.3 μm) in diameter or larger.

M. NESHAP – National Emission Standard for Hazardous Air Pollutants – EPA Rules under the Clean Air Act.

N. NIOSH – The National Institute for Occupational Safety and Health, which was established by the Occupational Safety and Health Act of 1970. Primary functions of NIOSH are to conduct research, issue technical information, and certify respirators.

O. Occupied Area – An area where personnel are present and are performing their normal activities intended for the area (such as in a typical office area from 8:00 to 5:00 p.m., Monday through Friday).

P. OSHA – Occupational Health & Safety Administration.

Q. Personal Air Samples – An air sample taken with a sampling pump directly attached to the worker with the collecting filter and cassette placed in the worker's breathing zone. These samples are required by the OSHA asbestos standards and the EPA Worker Protection Rule.

R. Polarized Light Microscopy (PLM) – A method of analysis using a light microscope to find the chemical or mineral types of samples, including the

concentration of asbestos in bulk materials. Used by EPA for AHERA and NESHAP, and by OSHA to see if asbestos is involved in a project.

S. Regulated ACM (RACM) – As defined by NESHAP in the November 20, 1990 Federal Register, regulated asbestos-containing material (RACM) means (a) Friable asbestos material (b) Category I non-friable ACM that has become friable. (c) Category I non-friable ACM that will be or has been subjected to sanding, grinding, cutting, or abrading, or (d) Category II non-friable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations regulated by this subpart. (Note: Regulated ACM is an EPA NESHAP concept. OSHA makes no distinction between friable and non-friable asbestos).

T. "Cutting" – means to penetrate with a sharp-edged instrument and includes sawing, but does not include shearing, slicing or punching.

U. "Grinding" – means to reduce to a powder or to small fragments and includes mechanical clipping or drilling.

V. Category I non-friable asbestos containing material (ACM) – means asbestos-containing packings, gaskets, resilient floor covering and asphalt roofing products containing more than 1 percent asbestos as determined using the method specified under AHERA.

W. Category II non-friable ACM – means any material, excluding Category I non-friable ACM containing more than 1 percent asbestos as determined using the methods specified under when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure.

X. Respirator - A device designed to protect the wearer from the inhalation of harmful particulates.

Y. Site – Manchester School of Technology

Z. Time Weighted Average (TWA) – In air sampling, this refers to the average air concentration of contaminants during a particular time period.

AA. Work – The tasks to conduct to achieve the completion of the project described in the Contract Documents.

BB. Work Area – The area where asbestos related work or removal operations are performed which is defined and/or isolated to prevent the spread of asbestos dust, fibers or debris, and entry by unauthorized personnel.

CC. Work Practices – Procedures designed to be followed to avoid or minimize dust generation during work activities.

1.7 DESCRIPTION OF WORK

A. The following is the General Scope of Work, at a minimum, required to be performed by the Asbestos Contractor for the removal of the existing glazing system. The Contractor shall adhere to the Scope of Work outlined below as well as any additional requirements stated herein. The Contractor shall perform all work and supply all skilled labor, materials, tools, and equipment necessary to:

1. Mobilize necessary labor, equipment, and materials, to the site to perform the required Work relating to asbestos removal and disposal.
2. Conduct disturbance of the caulking / glazing compound material in accordance with the OSHA engineering controls and work practices

outlined under 29 CFR 1926.1101(g). This includes, but is not limited to use of HEPA vacuums to promptly clean up all generated debris and dust, use of wet methods to control dust generation and potential exposures, and air monitoring of employees to document compliance with the asbestos TWA permissible exposure limit and excursion limit.

3. Cutting and grinding of the caulking / glazing compound may not be done unless in accordance with OSHA regulations.
4. Submit Work plan documents and employee training licenses to the Owner or Designee for review and, as required, approval prior to initiation of the Work.
5. If the Contractor uses scaffolding, it is his/her responsibility that it is erected and used in accordance with all Federal, State, and Local regulations.
6. Any temporary interior shoring and supports done by the Contractor must be designed and stamped by a Professional Engineer, per OSHA requirements.
7. Clean the Site within the Limits of Work to an acceptable OSHA standard and demobilize all labor, equipment, and materials.
8. Performance of any other work or activities required by this Specification, applicable regulations, or as necessary to perform a complete job to the satisfaction of the Owner or Designee.
9. The Contractor shall promptly notify the Owner and Designee if suspect ACMs are noted during the course of the Work. The Contractor shall notify the Owner prior to the collection of any bulk samples for asbestos analyses to allow for the Owner to collect bulk samples at the same time of collection by the Contractor for asbestos analyses.
10. The Owner reserves the right to collect samples for analysis in order to verify that the engineering controls and work practices used by the Contractor maintain air and dust concentrations within all applicable regulations. The Contractor shall be responsible to clean any portion of the Site where dust or debris generated during the Work has come to rest both inside and outside the renovation project area.

1.8 PROVISIONS OF WORK

The following provisions shall apply for asbestos work as identified by this section. The Contractor shall apply these provisions to all work areas throughout the Site building.

A. The Contractor shall pre-clean all floor areas and non-movable items of any dust and debris present. Pre-cleaning shall include the use of wet misting, wet wiping and/or HEPA vacuuming of all affected surfaces.

B. All Work shall be performed in accordance with Federal, State, and Local regulations. The Contractor shall assume full responsibility and liability for compliance with all applicable Federal, State, and Local regulations pertaining to work practices, hauling and disposal of generated waste, and protection of workers, visitors to the Site, and persons occupying areas adjacent to the Site.

C. The scheduling and sequencing of the Work of this Contract shall be determined by the Contractor and agreed to by the Owner or Designee.

D. No work of the project will be allowed to begin until the Owner or Designee approves the Pre-Job Submittals. Any delay caused by the Contractor's refusal to submit this documentation in a timely manner does not constitute a cause for change order or a time extension.

1.9 SUBMITTALS

A. Prior to the commencement of the required Work, the Contractor shall submit the following to the Owner for approval:

1. A list of all equipment to be used on site, by make and model, including HEPA vacuums, etc.
2. The name and address of the Contractor's personal air monitoring and testing laboratory including certification and proof of NIOSH proficiency in the P.A.T. Program.
3. A material safety and data sheet (MSDS) or equivalent, in accordance with the OSHA Hazard Communication Standard (29CFR 1910.1200) for all products and materials proposed for use on the project. Include a separate attachment for each sheet indicating the specific worker protective equipment proposed for use with the material indicated. A copy of the Contractor's complete OSHA Hazard Communication Standard must also be submitted and be kept on site at all times.
4. Identification based on the MSDS of any material or product that the Contractor proposes to use on the project that contains asbestos or vermiculite and the reasons why the material is proposed for use on the project. The Owner has the right to reject any material or product for use on this project that contains asbestos or vermiculite with no claim available by the Contractor for an increase in cost for the Work or an increase in schedule. If any material and/or product is installed or used on the Site then the Owner reserves the right to require the Contractor to remove the material and/or product at the Contractor’s expense.
5. Name, address, and ID number of the waste hauler and proposed disposal site.
6. Any other documentation, which applies and is called for by this or other sections of the Specifications or by the Owner.

B. Upon completion of the work, the Contractor shall submit the following items to the Owner.

1. All receipts detailing transportation and disposal of all waste materials generated by the work.
2. All analytical results of personal air samples collected in accordance with OSHA regulations to verify that the 8-hour TWA concentrations of asbestos fibers in the breathing zone of the workers has not exceeded the permissible exposure limit (PEL) of 0.1 f/cc.

1.10 TRAINING AND QUALIFICATIONS

All workers who work on this project shall be provided training by the Contractor to meet the OSHA regulations as applicable to the Work. All workers shall provide training certificates and Licenses to the owner prior to the arrival on site.

1.11 REGULATORY SUBMITTALS

A. The Contractor shall notify the following agencies of impending work, and shall provide evidence of notifications to the Owner:
   1. Manchester Planning and Community Development Department, and other federal, state, or local agencies as required by law or ordinance.

B. Permits
   1. The Contractor shall be responsible for securing all necessary permits for the work and provide copies to the Owner prior to implementing work, including hauling, removal, and disposal; building, fire, hot work, and materials usage; or any other permits required to perform the specified work.

C. Fees, Licenses, Patents, and Copyrights
   1. The Contractor shall pay all licensing fees, royalties, and other costs necessary for the use of any copyrighted or patented product, design, invention, or process in the performance of the job specified herein. The Contractor shall be solely responsible for costs, damages, or losses resulting from any infringement of these patent rights or copyrights.
   2. The Contractor shall hold the Owner and Designee harmless from any costs, damages, and losses resulting from any infringement of these patent rights or copyrights.
   3. If the Contract Specification requests the use of any product, design, invention, or process that requires a licensing fee or royalty fee for use in the performance of the job, the Contractor shall be responsible for the fee or royalty fee and shall disclose the existence of such rights.
   4. The Contractor shall be responsible for costs of all licensing requirements, where applicable, and notification requirements and all other fees related to the Contractor's ability to perform the work in this section.

1.12 SAFETY CONSIDERATIONS

A. This project is subject to compliance with Public Law 91-596, "Occupational Safety and Health Act of 1970" (OSHA), with respect to all Rules and Regulations pertaining to construction, including Volume 36, Numbers 75 and 105, of the Federal Register, as amended, and as published by the U.S. Department of Labor.

B. In addition to any detailed requirements of the Specification, the Contractor shall at his own cost and expense comply with all laws, ordinances, rules and regulations of Federal, State, Regional and Local Authorities regarding handling and storage of waste materials.

1.13 SECURITY

A. The Owner will provide specific access as required during the project to the Contractor and personnel assigned to the project. The access shall be determined by the Owner. The Contractor will be responsible for the security of the section of the building involved in the abatement project. It will also be the Contractor's responsibility to allow only authorized personnel into the work area, and to secure all assigned entrances and exits at the end of the workday. Authorized personnel

include licensed Contractor staff, the Project Monitor, and all other personnel with the appropriate training, medical approval, respirator fit testing, and personal protective equipment.

B. Any person entering or leaving the contained areas must sign the Contractor's bound log book and enter the date and time. The logbook must be located immediately outside work area at all times, and be open for inspection by the Owner.

1.14 REFERENCES

The following references are cited as applicable publications:

A. Environmental Protection Agency (NESHAPS) Title 40 CFR Part 61, as currently amended. Guidance for Controlling Friable Asbestos Containing Materials in Buildings, Final Rule and Notice. Asbestos Hazard Emergency Response Act (AHERA) Title 40 CFR Part 763.

B. Occupational Safety and Health Administration Title 29 CFR 1910. (Amended) Title 29 CFR 1926. (Amended)

C. State of New Hampshire Department of Environmental Services

D. U.S. Department of Transportation Regulations
49 CFR Parts 172 and 173

E. All regulations by these and other governing agencies in their most recent version are applicable. These specifications refer to many requirements found in these references, but in no way intend to cite or reiterate all provisions therein or elsewhere. It is the Contractor's responsibility to know, understand, and abide by all such applicable regulations and common practices.

F. Other provisions contained in these references may from time to time during the execution of this contract be enforced by the Owner at his/her own discretion.

G. Other provisions contained in these references may from time to time during the execution of this contract be enforced by the Owner at his/her own discretion.

H. New Hampshire Waste Disposal Regulations

I. Hazard Communication Standard (29 CFR 1926.59).

J. Spill Prevention Control and Countermeasures Plan (40 CFR, Part 112).

PART 2 - PRODUCTS

2.1 MATERIALS AND EQUIPMENT

The Contractor shall provide new materials and new or used equipment in undamaged and serviceable condition. Only materials and equipment that are recognized as being suitable for the intended use, by compliance with appropriate standards, are to be used during the project.

A. The Contractor shall utilize high efficiency filter vacuums to filter particles of 0.3 micrometers or larger at 99.97% efficiency or greater. The Contractor shall obtain HEPA vacuum attachments, such as various size brushes, crevice tools, and angular tools to be used for varied application, and service the HEPA vacuum routinely to assure proper operation. Caution shall be used any time the vacuum is opened for HEPA filter replacement or debris removal. Operators shall wear protective clothing and respirators when using the HEPA vacuum. Vacuuming by conventional means is unacceptable.

B. All temporary water connections to the Owner’s water system shall include back-flow protection. The Contractor shall provide heavy-duty abrasion-resistant hoses

with a pressure rating greater than the maximum pressure of the water distribution system to provide water into the work area.

PART 3 -EXECUTION

3.1 GENERAL CONSIDERATIONS

A. All temporary facilities, work procedures, equipment, materials, services, and agreements must strictly adhere to and meet these contract specifications along with EPA, OSHA, and NIOSH regulations and recommendations as well as any other federal, state, and local regulations. Where an overlap exists of these regulations, the most stringent one applies. All work performed by the Contractor is further subject to approval of the Owner. Written modification requests to these specifications must be made to the Owner for review and approval before they can be used for work on this project.

B. The Work shall be performed without damage to the building, including, but not limited to, structural members, ceilings, walls, pipes, duct work, light fixtures, etc., except where specified under demolition. Contractor shall provide protection of these items and materials as part of the work area preparation. Where Work activity causes damage, the Contractor shall patch, repair, replace or otherwise restore same to its original condition at no additional cost to the Owner.

C. The Contractor shall make sure all site safety work practices are followed according to all Federal, State, and Local regulations.

3.2 DISPOSAL OF WASTE

A. Waste removal procedures shall be conducted in accordance with Local, State and Federal regulations.

B. The Contractor shall be responsible for all necessary precautions to prevent pollution by spilling during the performance of services and shall assume full responsibility for all Contractors caused spills, which shall be cleaned up at the Contractor's expense.

C. Provide a Waste Manifest and/or Bills of Lading, as appropriate, with each shipment.

D. Drums and bulk items shall be transported from the Site immediately upon completion of removal and packing. No materials are to be stored at the site.

E. Dispose of all mechanical equipment generated in accordance with U.S. EPA, New Hampshire DES and waste hauler requirements.

3.3 HOUSEKEEPING

A. Throughout the work period, the Contractor shall maintain the building and Site in a standard of cleanliness as specified throughout these specifications.

1. The Contractor shall retain all stored items in an orderly arrangement allowing maximum access, not impeding traffic, and providing the required protection materials.
2. The Contractor shall not allow the accumulation of scrap, debris, waste material, and other items not required for completion of the work.

3. The Contractor shall provide adequate storage for all items awaiting removal from the job site, observing all requirements for fire protection and protection of the environment.
4. Daily, and more often if necessary, the Contractor shall inspect the work areas and adjoining spaces, and pick up all scrap, debris, and waste material. Remove all such items to the place designated for their storage.
5. The Contractor shall maintain the site in a neat and orderly condition at all times.

3.4 QUALITY CONTROL

The Owner and/or Designee will review the Contractor's work practices prior to the start of, and during all related work, and will report any specification violations to the Contractor. If the Contractor fails to correct deficiencies in a timely manner, the Owner will be notified in writing, and work may be stopped.

3.5 PERSONAL PROTECTION

A. The Contractor shall provide all protective equipment for workers and authorized personnel to access the Site.
B. The Contractor shall conduct personal sampling to check personal exposure levels for the purpose of establishing respiratory protection needs in accordance with OSHA. Samples shall be collected in accordance with OSHA regulations to represent the duration of the work shift and to determine the TWA and excursion limit. Sampling personnel shall be proficient in the taking of air samples as prescribed by NIOSH 7400, and must be supervised by an individual who has completed the NIOSH 582, or equivalent, training course.

END OF SECTION 02081

SECTION 07920 - JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes joint sealants as required:

1. Exterior joints in the following vertical surfaces and horizontal non-traffic surfaces:

a. Construction joints in cast-in-place concrete.
b. Joints between plant-precast architectural concrete units.
c. Control and expansion joints in unit masonry.
d. Joints in dimension stone cladding.
e. Joints in glass unit masonry assemblies.
f. Joints in exterior insulation and finish systems.
g. Joints between metal panels.
h. Joints between different materials listed above.
i. Perimeter joints between materials listed above and frames of doors, windows, and louvers].
j. Control and expansion joints in ceilings and other overhead surfaces].
k. All other exterior joints in vertical surfaces and horizontal nontraffic surfaces
l. Other joints as indicated.

2. Exterior joints in the following horizontal traffic surfaces:

a. Control and expansion joints in brick pavers.
b. Isolation and contraction joints in cast-in-place concrete slabs.
c. Joints between plant-precast architectural concrete paving units.
d. Joints in stone paving units, including steps.
e. Tile control and expansion joints.
f. Joints between different materials listed above.
g. Other exterior joints in horizontal traffic surfaces
h. Other joints as indicated.

3. Interior joints in the following vertical surfaces and horizontal nontraffic surfaces:

a. Control and expansion joints on exposed interior surfaces of exterior walls.
b. Perimeter joints of exterior openings where indicated.
c. Tile control and expansion joints.
d. Vertical joints on exposed surfaces of interior unit masonry, concrete, walls, and partitions.
e. Joints on underside of precast concrete

f. Perimeter joints between interior wall surfaces and frames of doors, windows and entrances
g. Joints between plumbing fixtures and adjoining walls, floors, and counters.
h. Other joints as indicated and as needed.

4. Interior joints in the following horizontal traffic surfaces:

a. Isolation joints in cast-in-place concrete slabs.
b. Control and expansion joints in stone flooring.
c. Control and expansion joints in brick flooring.
d. Control and expansion joints in tile flooring.
e. Other joints as indicated.

B. Related Sections include the following:

1. Division 2 Section "Pavement Joint Sealants" for sealing joints in pavements, walkways, and curbing.
2. Division 4 Section "Unit Masonry Assemblies" for masonry control and expansion joint fillers and gaskets.
3. Division 7 Section "Fire-Resistive Joint Systems" for sealing joints in fire-resistance-rated construction.
4. Division 8 Section "Glazing" for glazing sealants.
5. Division 8 Section "Plastic Glazing" for plastic glazing sealants.
6. Division 8 Section "Structural-Sealant-Glazed Curtain Walls" for structural and other glazing sealants.
7. Division 9 Section "Gypsum Veneer Plaster" for sealing perimeter joints of gypsum veneer plaster partitions to reduce sound transmission.
8. Division 9 Section "Gypsum Board Assemblies" for sealing perimeter joints of gypsum board partitions to reduce sound transmission.
9. Division 9 Section "Ceramic Tile" for sealing tile joints.
10. Division 9 Section Ceilings for sealing edge moldings at perimeters of acoustical ceilings.
11. Division 9 Section "Chemical-Resistant Brick Flooring" for sealing flooring joints.

1.3 PERFORMANCE REQUIREMENTS

A. Provide elastomeric joint sealants that establish and maintain watertight and airtight continuous joint seals without staining or deteriorating joint substrates.

B. Provide joint sealants for interior applications that establish and maintain airtight and water-resistant continuous joint seals without staining or deteriorating joint substrates.

1.4 SUBMITTALS

A. Product Data: For each joint-sealant product indicated.

B. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.

C. Samples for Verification: For each type and color of joint sealant required, provide Samples with joint sealants in 1/2-inch- (13-mm-) wide joints formed between two 6-inch- (150-mm-) long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.

D. Product Certificates: For each type of joint sealant and accessory, signed by product manufacturer.

E. SWRI Validation Certificate: For each elastomeric sealant specified to be validated by SWRI's Sealant Validation Program.

F. Qualification Data: For Installer.

G. Preconstruction Field Test Reports: Indicate which sealants and joint preparation methods resulted in optimum adhesion to joint substrates based on preconstruction testing specified in "Quality Assurance" Article.

H. Compatibility and Adhesion Test Reports: From sealant manufacturer, indicating the following:

1. Materials forming joint substrates and joint-sealant backings have been tested for compatibility and adhesion with joint sealants.
2. Interpretation of test results and written recommendations for primers and substrate preparation needed for adhesion.

I. Field Test Report Log: For each elastomeric sealant application.

J. Product Test Reports: Based on comprehensive testing of product formulations performed by a qualified testing agency, indicating that sealants comply with requirements.

K. Warranties: Special warranties specified in this Section.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Manufacturer's authorized Installer who is approved or licensed for installation of elastomeric sealants required for this Project.

B. Source Limitations: Obtain each type of joint sealant through one source from a single manufacturer.

C. Preconstruction Compatibility and Adhesion Testing: Submit to joint-sealant manufacturers, for testing indicated below, samples of materials that will contact or affect joint sealants.

1. Use ASTM C 1087 to determine whether priming and other specific joint preparation techniques are required to obtain rapid, optimum adhesion of joint sealants to joint substrates.
2. Submit not fewer than five pieces of each type of material, including joint substrates, shims, joint-sealant backings, secondary seals, and miscellaneous materials.
3. Schedule sufficient time for testing and analyzing results to prevent delaying the Work.
4. For materials failing tests, obtain joint-sealant manufacturer's written instructions for corrective measures including use of specially formulated primers.

5. Testing will not be required if joint-sealant manufacturers submit joint preparation data that are based on previous testing of current sealant products for adhesion to, and compatibility with, joint substrates and other materials matching those submitted.

D. Product Testing: Obtain test results for "Product Test Reports" Paragraph in "Submittals" Article from a qualified testing agency based on testing current sealant formulations within a 36-month period preceding the Notice to Proceed with the Work.

1. Testing Agency Qualifications: An independent testing agency qualified according to ASTM C 1021 to conduct the testing indicated, as documented according to ASTM E 548.
2. Test elastomeric joint sealants for compliance with requirements specified by reference to ASTM C 920, and where applicable, to other standard test methods.
3. Test elastomeric joint sealants according to SWRI's Sealant Validation Program for compliance with requirements specified by reference to ASTM C 920 for adhesion and cohesion under cyclic movement, adhesion-in-peel, and indentation hardness.
4. Test other joint sealants for compliance with requirements indicated by referencing standard specifications and test methods.

E. Preconstruction Field-Adhesion Testing: Before installing elastomeric sealants, field test their adhesion to Project joint substrates as follows:

1. Locate test joints where indicated on Project or, if not indicated, as directed by Owner or Owner’s representative.
2. Conduct field tests for each application indicated below:

    a. Each type of elastomeric sealant and joint substrate indicated.
    b. Each type of nonelastomeric sealant and joint substrate indicated.

3. Notify Owner or Owner’s representative seven days in advance of dates and times when test joints will be erected.
4. Arrange for tests to take place with joint-sealant manufacturer's technical representative present.

    a. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C 1193.

        1) For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.

5. Report whether sealant in joint connected to pulled-out portion failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each type of product and joint substrate. For sealants that fail adhesively, retest until satisfactory adhesion is obtained.
6. Evaluation of Preconstruction Field-Adhesion-Test Results: Sealants not evidencing adhesive failure from testing, in absence of other indications of noncompliance with requirements, will be considered satisfactory. Do not use sealants that fail to adhere to joint substrates during testing.

F. Mockups: Build mockups incorporating sealant joints, as follows, to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution:

1. Joints in mockups of assemblies specified in other Sections that are indicated to receive elastomeric joint sealants, which are specified by reference to this Section.

G. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."

1.6 PROJECT CONDITIONS

A. Do not proceed with installation of joint sealants under the following conditions:

1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer[or are below 40 deg F (5 deg C)].
2. When joint substrates are wet.
3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
4. Contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

1.7 WARRANTY

A. Special Installer's Warranty: Installer's standard form in which Installer agrees to repair or replace elastomeric joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: one year from date of Substantial Completion.

B. Special Manufacturer's Warranty: Manufacturer's standard form in which elastomeric sealant manufacturer agrees to furnish elastomeric joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: one year from date of Substantial Completion.

C. Special warranties specified in this Article exclude deterioration or failure of elastomeric joint sealants from the following:

1. Movement of the structure resulting in stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression caused by structural settlement or errors attributable to design or construction.
2. Disintegration of joint substrates from natural causes exceeding design specifications.
3. Mechanical damage caused by individuals, tools, or other outside agents.
4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products listed in other Part 2 articles.

B. Products: Subject to compliance with requirements, provide one of the products listed in other Part 2 articles.

2.2 MATERIALS, GENERAL

A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by sealant manufacturer, based on testing and field experience.

B. Colors of Exposed Joint Sealants: As selected by Owner or Owner's representative from manufacturer's full range.

2.3 ELASTOMERIC JOINT SEALANTS

A. Elastomeric Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied chemically curing sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.

B. Stain-Test-Response Characteristics: Where elastomeric sealants are specified to be nonstaining to porous substrates, provide products that have undergone testing according to ASTM C 1248 and have not stained porous joint substrates indicated for Project.

C. Suitability for Immersion in Liquids. Where elastomeric sealants are indicated for Use I for joints that will be continuously immersed in liquids, provide products that have undergone testing according to ASTM C 1247 and qualify for the length of exposure indicated by reference to ASTM C 920 for Class 1 or 2. Liquid used for testing sealants is deionized water, unless otherwise indicated.

D. Suitability for Contact with Food: Where elastomeric sealants are indicated for joints that will come in repeated contact with food, provide products that comply with 21 CFR 177.2600.

E. Multicomponent Nonsag Polysulfide Sealant:

1. Products:

    a. Pacific Polymers, Inc.; Elasto-Seal 227 Type II (Gun Grade).
    b. Pecora Corporation; Synthacalk GC-2+.
    c. Sonneborn, Division of ChemRex Inc.; Sonolastic Polysulfide Sealant.
    d.

2. Type and Grade: M (multicomponent) and NS (nonsag).
3. Class: 25.
4. Uses Related to Exposure: traffic and nontraffic.
5. Uses Related to Joint Substrates: as applicable to joint substrates indicated and required.

F. Multicomponent Nonsag Immersible Polysulfide Sealant:

1. Available Products:

    a. Pecora Corporation; GC-2+.
    b. PolySpec Corp.; T-2235-M.

2. Type and Grade: M (multicomponent) and NS (nonsag).
3. Class: 25.
4. Uses Related to Exposure: as applicable to joint substrates indicated.

G. Multicomponent Pourable Polysulfide Sealant [ES-<#>]:

1. Products:

    a. Meadows, W. R., Inc.; Deck-O-Seal.
    b. Pacific Polymers, Inc.; Elastoseal 227 Type I (Pourable).

2. Type and Grade: M (multicomponent) and P (pourable).
3. Class: 25.
4. Uses Related to Exposure: T (traffic) and NT (nontraffic).
5. Uses Related to Joint Substrates: as applicable to joint substrates indicated.

    a. .

H. Single-Component Nonsag Polysulfide Sealant:

1. Products:

    a. Pacific Polymers, Inc.; Elastoseal 230 Type I (Gun Grade).
    b. Polymeric Systems Inc.; PSI-7000.

2. Type and Grade: S (single component) and NS (nonsag).
3. Class: 25.
4. Use Related to Exposure: NT (nontraffic).
5. Uses Related to Joint Substrates: as applicable to joint substrates indicated.

I. Multicomponent Nonsag Neutral-Curing Silicone Sealant:

1. Products:

    a. Dow Corning Corporation; 756 H.P.

2. Type and Grade: M (multicomponent) and P (pourable).
3. Class: 50.
4. Use Related to Exposure: NT (nontraffic).
5. Uses Related to Joint Substrates: as applicable to joint substrates indicated.

J. Multicomponent Pourable Neutral-Curing Silicone Sealant:

1. Products:

a. Dow Corning Corporation; FC Parking Structure Sealant.

2. Type and Grade: M (multicomponent) and P (pourable).
3. Class: 25.
4. Uses Related to Exposure: T (traffic) and NT (nontraffic).
5. Uses Related to Joint Substrates: applicable to joint substrates indicated, O.

K. Single-Component Pourable Neutral-Curing Silicone Sealant:

1. Products:

a. Dow Corning Corporation; 890-SL.
b. Pecora Corporation; 300 Pavement Sealant (Self Leveling).
c. Dow Corning Corporation; SL Parking Structure Sealant.

2. Type and Grade: S (single component) and P (pourable).
3. Class: 100/50.
4. Uses Related to Exposure: NT and [T (traffic)].
5. Uses Related to Joint Substrates: as applicable to joint substrates indicated.

a.

L. Single-Component Silicone Sealant:

1. Products:

a. Dow Corning Corporation; 790.
b. GE Silicones; SilPruf LM SCS2700.
c. Tremco; Spectrem 1 (Basic).
d. GE Silicones; SilPruf SCS2000.
e. Dow Corning Corporation; 791.
f. Dow Corning Corporation; 795
g. GE Silicones; SilPruf NB SCS9000.
h. GE Silicones; UltraPruf II SCS2900.

2. Type and Grade: S (single component) and NS (nonsag).
3. Use Related to Exposure: NT (nontraffic).
4. Uses Related to Joint Substrates: as applicable to joint substrates indicated.

5. Stain-Test-Response Characteristics: Nonstaining to porous substrates per ASTM C 1248.

M. Single-Component Neutral-Curing Silicone Sealant [ES-<#>]:

1. Products:

a. Dow Corning Corporation; 799.
b. GE Silicones; UltraGlaze SSG4000.
c. GE Silicones; UltraGlaze SSG4000AC.
d. Tremco; Proglaze SG.
e. Tremco; Spectrem 2.

f. Tremco; Tremsil 600.

2. Type and Grade: S (single component) and NS (nonsag).
3. Class: 25.
4. Use Related to Exposure: NT (nontraffic).
5. Uses Related to Joint Substrates: as applicable to joint substrates indicated

N. Single-Component Acid-Curing Silicone Sealant:

1. Products:
   a. Dow Corning Corporation; 999-A.
   b. Dow Corning Corporation; Trademate Glazing.
   c. GE Silicones; Construction SCS1200.
   d. GE Silicones; Contractors SCS1000.
   e. GE Silicones; Sanitary SCS1700.

2. Type and Grade: S (single component) and NS (nonsag).
3. Class: 25.
4. Use Related to Exposure: NT (nontraffic).
5. Uses Related to Joint Substrates: as applicable to joint substrates indicated.

O. Single-Component Mildew-Resistant Neutral-Curing Silicone Sealant:

1. Products:

   a. Pecora Corporation; 898.
   b. Tremco; Tremsil 600 White.

2. Type and Grade: S (single component) and NS (nonsag).
3. Class: 25.
4. Use Related to Exposure: NT (nontraffic).
5. Uses Related to Joint Substrates: as applicable to joint substrates indicated.

P. Single-Component Mildew-Resistant Acid-Curing Silicone Sealant:

1. Products:

   a. Dow Corning Corporation; 786 Mildew Resistant.
   b. GE Silicones; Sanitary SCS1700.
   c. Tremco; Tremsil 200.

2. Type and Grade: S (single component) and NS (nonsag).
3. Class: 25.
4. Use Related to Exposure: NT (nontraffic).
5. Uses Related to Joint Substrates: as applicable to joint substrates indicated.

Q. Multicomponent Nonsag Urethane Sealant:

1. Products:

   a. Pecora Corporation; Dynatrol II.

b. Tremco; Dymeric 511.
c. Tremco; Vulkem 922.

2. Type and Grade: M (multicomponent) and NS (nonsag).
3. Class: 50.
4. Use Related to Exposure: NT (nontraffic) andT (traffic).
5. Uses Related to Joint Substrates: as applicable to joint substrates indicated.

R. Multicomponent Nonsag Urethane Sealant:

1. Products:
   a. Sika Corporation, Inc.; Sikaflex - 2c NS TG.
   b. Sonneborn, Division of ChemRex Inc.; NP 2.
   c. Tremco; Vulkem 227.
   d. Tremco; Vulkem 322 DS.

2. Type and Grade: M (multicomponent) and NS (nonsag).
3. Class: 25.
4. Uses Related to Exposure: T (traffic) and NT (nontraffic).
5. Uses Related to Joint Substrates: as applicable to joint substrates indicated.

S. Multicomponent Nonsag Urethane Sealant:

1. Products:

   a. Bostik Findley; Chem-Calk 500.
   b. Pacific Polymers, Inc.; Elasto-Thane 227 R Type II (Gun Grade).
   c. Polymeric Systems Inc.; PSI-270.
   d. Tremco; Dymeric.

2. Type and Grade: M (multicomponent) and NS (nonsag).
3. Class: 25.
4. Additional Movement Capability: 40 percent movement in extension and 25 percent in compression for a total of 65 percent movement.
5. Use Related to Exposure: NT (nontraffic).
6. Uses Related to Joint Substrates: as applicable to joint substrates indicated.

T. Multicomponent Nonsag Urethane Sealant:

1. Products:

   a. Pacific Polymers, Inc.; Elasto-Thane 227 High Shore Type II (Gun Grade).
   b. Pacific Polymers, Inc.; Elasto-Thane 227 Type II (Gun Grade).
   c. Pecora Corporation; Dynatred.
   d. Polymeric Systems Inc.; PSI-270.

2. Type and Grade: M (multicomponent) and NS (nonsag).
3. Class: 25.
4. Use Related to Exposure: T (traffic).
5. Uses Related to Joint Substrates: as applicable to joint substrates indicated

U. Multicomponent Nonsag Immersible Urethane Sealant

1. Products:

    a. Pacific Polymers, Inc.; Elasto-Thane 227 R Type II (Gun Grade).
    b. Pecora Corporation; Dynatred.
    c. Tremco; Vulkem 227.
    d. Tremco; Vulkem 322 DS.

2. Type and Grade: M (multicomponent) and NS (nonsag).
3. Class: 25.
4. Use Related to Exposure: T (traffic), NT (nontraffic)] and I (immersible).
5. Uses Related to Joint Substrates: as applicable to joint substrates indicated.

V. Multicomponent Pourable Urethane Sealant:

1. Products:
    a. Meadows, W. R., Inc.; POURTHANE.
    b. Tremco; THC-901.
    c. Tremco; THC-900.
    d. Tremco; Vulkem 245.

2. Type and Grade: M (multicomponent) and P (pourable).
3. Use Related to Exposure: T (traffic).
4. Uses Related to Joint Substrates: as applicable to joint substrates indicated.

W. Multicomponent Pourable Urethane Sealant:

1. Products:
    a. Sika Corporation, Inc.; Sikaflex - 2c SL.
    b. Sonneborn, Division of ChemRex Inc.; SL 2.

2. Type and Grade: M (multicomponent) and P (pourable).
3. Uses Related to Exposure: T (traffic) and NT (nontraffic).
4. Uses Related to Joint Substrates: as applicable to joint substrates indicated.

X. Multicomponent Pourable Immersible Urethane Sealant:

1. Products:

    a. Pacific Polymers, Inc.; Elasto-Thane 227 R Type II (Self Leveling).
    b. Tremco; Vulkem 245.

2. Type and Grade: M (multicomponent) and P (pourable).
3. Uses Related to Exposure: T (traffic), NT (nontraffic) and I (immersible)
4. Uses Related to Joint Substrates: as applicable to joint substrates indicated.

Y. Single-Component Nonsag Urethane Sealant:

1. Products:

    a. Sika Corporation, Inc.; Sikaflex - 1a.

b. Sika Corporation, Inc.; Sikaflex - 15LM.
c. Sonneborn, Division of ChemRex Inc.; Ultra.
d. Sonneborn, Division of ChemRex Inc.; NP 1.
e. Tremco; Vulkem 116.

2. Type and Grade: S (single component) and NS (nonsag).
3. Uses Related to Exposure: T (traffic) and NT (nontraffic).
4. Uses Related to Joint Substrates: as applicable to joint substrates indicated.

Z. Single-Component Nonsag Urethane Sealant:

1. Products:
   a. Tremco; DyMonic.
   b. Tremco; Vulkem 921.
   c. Tremco; Vulkem 931.

2. Type and Grade: S (single component) and NS (nonsag).
3. Use Related to Exposure: NT (nontraffic).
4. Uses Related to Joint Substrates: as applicable to joint substrates indicated.

AA. Multicomponent Nonsag Immersible Urethane Sealant:

1. Products:

   a. Tremco; Vulkem 116.
   b. Tremco; Vulkem 921.

2. Type and Grade: M (multicomponent) and P (pourable).
3. Uses Related to Exposure: T (traffic), NT (nontraffic) and I (immersible).
4. Uses Related to Joint Substrates: as applicable to joint substrates indicated.

BB. Single-Component Pourable Urethane Sealant:

1. Products:

   a. Sika Corporation, Inc.; Sikaflex - 1CSL.
   b. Sonneborn, Division of ChemRex Inc.; SL 1.
   c. Tremco; Vulkem Nova 300 SSL.

2. Type and Grade: S (single component) and P (pourable).
3. Uses Related to Exposure: T (traffic) and NT (nontraffic).
4. Uses Related to Joint Substrates: as applicable to joint substrates indicated.

CC. Single-Component Pourable Urethane Sealant:

1. Products:

   a. Bostik Findley; Chem-Calk 950.
   b. Pecora Corporation; Urexpan NR-201.
   c. Polymeric Systems Inc.; Flexiprene 952.
   d. Schnee-Morehead, Inc.; Permathane SM7101.

e. Tremco; Tremflex S/L.
f. Tremco; Vulkem 45.

2. Type and Grade: S (single component) and P (pourable).
3. Class: 25.
4. Use Related to Exposure: T (traffic).
5. Uses Related to Joint Substrates: as applicable to joint substrates indicated.

2.4 SOLVENT-RELEASE JOINT SEALANTS

A. Acrylic-Based Solvent-Release Joint Sealant [SRS-<#>]: Comply with ASTM C 1311 or FS TT-S-00230.

1. Products:

a. Schnee-Moorehead, Inc.; Acryl-R Acrylic Sealant.
b. Tremco; Mono 555.

B. Butyl-Rubber-Based Solvent-Release Joint Sealant [SRS-<#>]: Comply with ASTM C 1085.

1. Products:

a. Bostik Findley; Bostik 300.
b. Sonneborn, Division of ChemRex Inc.; Sonneborn Multi-Purpose Sealant.
c. Tremco; Tremco Butyl Sealant.

C. Pigmented Narrow-Joint Sealant: Manufacturer's standard, solvent-release-curing, pigmented, synthetic-rubber sealant complying with AAMA 803.3 and formulated for sealing joints 3/16 inch (5 mm) or smaller in width.

1. Products:

a. Fuller, H. B. Company; SC-0289.
b. Schnee-Morehead, Inc.; SM 5504 Acryl-R Narrow Joint Sealant.

2.5 LATEX JOINT SEALANTS

A. Latex Sealant: Comply with ASTM C 834, Type P, Grade NF.

B. Products:
1. Sonneborn, Division of ChemRex Inc.; Sonolac.
2. Tremco; Tremflex 834.

2.6 ACOUSTICAL JOINT SEALANTS

A. Acoustical Sealant for Exposed and Concealed Joints: Manufacturer's standard nonsag, paintable, nonstaining latex sealant complying with ASTM C 834 and the following:

1. Product effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.
2. Products:

    a. Pecora Corporation; AC-20 FTR Acoustical and Insulation Sealant.
    b. United States Gypsum Co.; SHEETROCK Acoustical Sealant.

B. Acoustical Sealant for Concealed Joints: Manufacturer's standard, nondrying, nonhardening, nonskinning, nonstaining, gunnable, synthetic-rubber sealant recommended for sealing interior concealed joints to reduce airborne sound transmission.

1. Products:

    a. Pecora Corporation; BA-98.
    b. Tremco; Tremco Acoustical Sealant.

2.7 PREFORMED JOINT SEALANTS

A. Preformed Silicone-Sealant System: Manufacturer's standard system consisting of precured low-modulus silicone extrusion, in sizes to fit joint widths indicated, combined with a neutral-curing silicone sealant for bonding extrusions to substrates.

1. Products:

    a. Dow Corning Corporation; 123 Silicone Seal.
    b. GE Silicones; UltraSpan US1100.
    c. Tremco; Spectrem Ez Seal.

B. Preformed Foam Sealant: Manufacturer's standard preformed, precompressed, open-cell foam sealant that is manufactured from high-density urethane foam impregnated with a nondrying, water-repellent agent; is factory produced in precompressed sizes in roll or stick form to fit joint widths indicated; is coated on one side with a pressure-sensitive adhesive and covered with protective wrapping; develops a watertight and airtight seal when compressed to the degree specified by manufacturer; and complies with the following:

1. Products:

    a. EMSEAL Joint Systems, Ltd.; Emseal 25V.
    b. illbruck Sealant Systems, Inc.; Wilseal 600.
    c. Polytite Manufacturing Corporation; Polytite B.
    d. Polytite Manufacturing Corporation; Polytite Standard.
    e. Sandell Manufacturing Co., Inc.; Polyseal.

2. Properties: Permanently elastic, mildew resistant, nonmigratory, nonstaining, and compatible with joint substrates and other joint sealants.

    a. Density: Manufacturer's standard.

2.8 PREFORMED TAPE SEALANTS

A. Back-Bedding Mastic Tape Sealant: Preformed, butyl-based elastomeric tape sealant with a solids content of 100 percent; nonstaining and nonmigrating in contact with nonporous surfaces; with or without spacer rod as recommended in writing by tape manufacturers for application indicated; packaged on rolls with a release paper backing; and complying with ASTM C 1281 and AAMA 800 for products indicated below:

1. AAMA 804.3 tape, where indicated.
2. AAMA 806.3 tape, for applications in which tape is subject to continuous pressure.
3. AAMA 807.3 tape, for applications in which tape is not subject to continuous pressure.

B. Expanded Cellular Tape Sealant: Closed-cell, PVC foam tape sealant; factory coated with adhesive on both surfaces; packaged on rolls with release liner protecting adhesive; and complying with AAMA 800 for the following types:

1. Type 1, for applications in which tape acts as the primary sealant.
2. Type 2, for applications in which tape is used in combination with a full bead of liquid sealant.

2.9 JOINT-SEALANT BACKING

A. General: Provide sealant backings of material and type that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.

B. Cylindrical Sealant Backings: ASTM C 1330, type as approved in writing by joint-sealant manufacturer for joint application indicated, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance:

C. Elastomeric Tubing Sealant Backings: Neoprene, butyl, EPDM, or silicone tubing complying with ASTM D 1056, nonabsorbent to water and gas, and capable of remaining resilient at temperatures down to minus 26 deg F (minus 32 deg C). Provide products with low compression set and of size and shape to provide a secondary seal, to control sealant depth, and to otherwise contribute to optimum sealant performance.

D. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint where such adhesion would result in sealant failure. Provide self-adhesive tape where applicable.

2.10 MISCELLANEOUS MATERIALS

A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.

C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:

1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
2. Clean porous joint substrate surfaces by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include the following:

    a. Concrete.
    b. Masonry.
    c. Unglazed surfaces of ceramic tile.

3. Remove laitance and form-release agents from concrete.
4. Clean nonporous surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following:

    a. Metal.
    b. Glass.
    c. Porcelain enamel.
    d. Glazed surfaces of ceramic tile.

B. Joint Priming: Prime joint substrates where recommended in writing by joint-sealant manufacturer based on preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

C. Masking Tape: Use masking tape where required to prevent contact of sealant with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.

B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

C. Acoustical Sealant Application Standard: Comply with recommendations in ASTM C 919 for use of joint sealants in acoustical applications as applicable to materials, applications, and conditions indicated.

D. Install sealant backings of type indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.

1. Do not leave gaps between ends of sealant backings.
2. Do not stretch, twist, puncture, or tear sealant backings.
3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.

E. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.

F. Install sealants using proven techniques that comply with the following and at the same time backings are installed:

1. Place sealants so they directly contact and fully wet joint substrates.
2. Completely fill recesses in each joint configuration.
3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

G. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.

1. Remove excess sealant from surfaces adjacent to joints.
2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
3. Provide concave joint configuration per Figure 5A in ASTM C 1193, unless otherwise indicated.
4. Provide flush joint configuration where indicated per Figure 5B in ASTM C 1193.
5. Provide recessed joint configuration of recess depth and at locations indicated per Figure 5C in ASTM C 1193.

a. Use masking tape to protect surfaces adjacent to recessed tooled joints.

H. Installation of Preformed Tapes: Install according to manufacturer's written instructions.

I. Installation of Preformed Silicone-Sealant System: Comply with the following requirements:

1. Apply masking tape to each side of joint, outside of area to be covered by sealant system.
2. Apply silicone sealant to each side of joint to produce a bead of size complying with preformed silicone-sealant system manufacturer's written instructions and covering a bonding area of not less than 3/8 inch (10 mm). Hold edge of sealant bead 1/4 inch (6 mm) inside masking tape.
3. Within 10 minutes of sealant application, press silicone extrusion into sealant to wet extrusion and substrate. Use a roller to apply consistent pressure and ensure uniform contact between sealant and both extrusion and substrate.
4. Complete installation of sealant system in horizontal joints before installing in vertical joints. Lap vertical joints over horizontal joints. At ends of joints, cut silicone extrusion with a razor knife.

J. Installation of Preformed Foam Sealants: Install each length of sealant immediately after removing protective wrapping, taking care not to pull or stretch material, producing seal continuity at ends, turns, and intersections of joints. For applications at low ambient temperatures where expansion of sealant requires acceleration to produce seal, apply heat to sealant in compliance with sealant manufacturer's written instructions.

3.4 FIELD QUALITY CONTROL

A. Field-Adhesion Testing: Field test joint-sealant adhesion to joint substrates as follows:

1. Extent of Testing: Test completed elastomeric sealant joints as follows:

a. Perform two tests for the first 500 feet of joint length for each type of elastomeric sealant and joint substrate.
b. Perform 1 test for each 1000 feet (300 m) of joint length thereafter or 1 test per each floor per elevation.

2. Test Method: Test joint sealants according to ASTM C 1193, or as appropriate for type of joint-sealant application indicated.

a. For joints with dissimilar substrates, verify adhesion to each substrate separately; do this by extending cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.

3. Inspect joints for complete fill, for absence of voids, and for joint configuration complying with specified requirements. Record results in a field-adhesion-test log.
4. Inspect tested joints and report on the following:

a. Whether sealants in joints connected to pulled-out portion failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each type of product and joint substrate. Compare these results to determine if adhesion passes sealant manufacturer's field-adhesion hand-pull test criteria.

b. Whether sealants filled joint cavities and are free of voids.
c. Whether sealant dimensions and configurations comply with specified requirements.

5. Record test results in a field-adhesion-test log. Include dates when sealants were installed, names of persons who installed sealants, test dates, test locations, whether joints were primed, adhesion results and percent elongations, sealant fill, sealant configuration, and sealant dimensions.
6. Repair sealants pulled from test area by applying new sealants following same procedures used originally to seal joints. Ensure that original sealant surfaces are clean and that new sealant contacts original sealant.

B. Evaluation of Field Test Results: Sealants not evidencing adhesive failure from testing or noncompliance with other indicated requirements will be considered satisfactory. Remove sealants that fail to adhere to joint substrates during testing or to comply with other requirements. Retest failed applications until test results prove sealants comply with indicated requirements.

3.5 CLEANING

A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.6 PROTECTION

A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

3.7 JOINT-SEALANT SCHEDULE

A. Joint-Sealant Application: Exterior vertical and horizontal nontraffic construction joints in cast-in-place concrete.

1. Joint Sealant: Multicomponent nonsag polysulfide sealant
2. Joint-Sealant Color: As selected by Owner or Owner’s representative from manufacturer's full range.

B. Joint-Sealant Application: Exterior horizontal non traffic and traffic joints in cast-in-place concrete slabs.

1. Joint Sealant: Multicomponent polysulfide sealant.
2. Joint-Sealant Color: As selected by Owner or Owner’s representative from manufacturer's full range.

C. Joint-Sealant Application: Exterior vertical and horizontal nontraffic joints between plant-precast architectural concrete units.

1. Joint Sealant: Multicomponent nonsag polysulfide sealant.
2. Joint-Sealant Color: As selected by Owner or Owner’s representative from manufacturer's full range.

D. Joint-Sealant Application: Exterior vertical control and expansion joints in unit masonry.

1. Joint Sealant: Multicomponent nonsag polysulfide sealant.
2. Joint-Sealant Color: As selected by Owner or Owner’s representative from manufacturer's full range.

E. Joint-Sealant Application: Exterior joints in dimension stone cladding.

1. Joint Sealant: Multicomponent nonsag polysulfide sealant.
2. Joint-Sealant Color: As selected by Owner or Owner’s representative from manufacturer's full range.

F. Joint-Sealant Application: Interior and exterior sealant-pointed mortar joints in glass unit masonry assemblies.

1. Joint Sealant: Single-component silicone sealant.
2. Joint-Sealant Color: As selected by Owner or Owner’s representative from manufacturer's full range.

G. Joint-Sealant Application: Exterior joints in exterior insulation and finish systems.

1. Joint Sealant: Silicone-sealant system.
2. Joint-Sealant Color: As selected by Owner or Owner’s representative from manufacturer's full range.

H. Joint-Sealant Application: Exterior butt joints between metal panels.

1. Joint Sealant: Single-component silicone sealant.
2. Joint-Sealant Color: As selected by Owner or Owner’s representative from manufacturer's full range.

I. Joint-Sealant Application: Exterior vertical joints between different materials listed above.

1. Joint Sealant: Multicomponent nonsag polysulfide sealant.
2. Joint-Sealant Color: As selected by Owner or Owner’s representative from manufacturer's full range.

J. Joint-Sealant Application: Exterior perimeter joints between exterior surfaces and frames of doors, windows and louvers.

1. Joint Sealant: Multicomponent nonsag polysulfide sealant.
2. Joint-Sealant Color: As selected by Owner or Owner’s representative from manufacturer's full range.

K. Joint-Sealant Application: Exterior control and expansion joints in ceilings and other overhead surfaces.

1. Joint Sealant: Multicomponent nonsag polysulfide sealant.
2. Joint-Sealant Color: As selected by Owner or Owner's representative from manufacturer's full range.

L. Joint-Sealant Application: other exterior joints in vertical and horizontal nontraffic surfaces.

1. Joint Sealant: Multicomponent nonsag polysulfide sealant.
2. Joint-Sealant Color: As selected by Owner or Owner's representative from manufacturer's full range.

M. Joint-Sealant Application: Exterior control and expansion joints in horizontal traffic surfaces.

1. Joint Sealant: Multicomponent pourable polysulfide sealant.
2. Joint-Sealant Color: As selected by Owner or Owner's representative from manufacturer's full range.

N. Joint-Sealant Application JS-[#]: Vertical control and expansion joints on exposed interior surfaces of exterior walls.

1. Joint Sealant: Multicomponent nonsag polysulfide sealant.
2. Joint-Sealant Color: As selected by Owner or Owner's representative from manufacturer's full range.

O. Joint-Sealant Application: Interior perimeter joints of exterior openings.

1. Joint Sealant: Multicomponent nonsag polysulfide sealant.
2. Joint-Sealant Color: As selected by Owner or Owner's representative from manufacturer's full range.

P. Joint-Sealant Application: Interior tile expansion, control, contraction, and isolation joints in horizontal traffic surfaces.

1. Joint Sealant: Multicomponent pourable polysulfide sealant.
2. Joint-Sealant Color: As selected by Owner or Owner's representative from manufacturer's full range.

Q. Joint-Sealant Application: Interior joints between plumbing fixtures and adjoining walls, floors, and counters.

1. Joint Sealant: Single-component mildew-resistant silicone sealant.
2. Joint-Sealant Color: As selected by Owner or Owner's representative from manufacturer's full range.

R. Joint-Sealant Application: Vertical joints on exposed surfaces of interior walls and] partitions.

1. Joint Sealant: Multicomponent nonsag polysulfide sealant.
2. Joint-Sealant Color: As selected by Owner or Owner's representative from manufacturer's full range.

S. Joint-Sealant Application: Perimeter joints between interior wall surfaces and frames of interior doors, windows and entrances.

1. Joint Sealant: Latex sealant.
2. Joint-Sealant Color: As selected by Owner or Owner’s representative from manufacturer's full range.

T. Joint-Sealant Application: Interior control, expansion, and isolation joints in horizontal traffic surfaces of flooring and other interior joints in horizontal traffic surfaces.

1. Joint Sealant: Multicomponent pourable polysulfide sealant.
2. Joint-Sealant Color: As selected by Owner or Owner’s representative from manufacturer's full range.

END OF SECTION 07920

DIVISION 13 -- SPECIAL CONSTRUCTION
SECTION 13 34 12.13

"TRANSLUCENT GLAZING SYSTEM"
Guide Specification

PART 1 GENERAL

1.01 PROJECT DESCRIPTION

A. The design and engineering of production documents, including certified load test data for the skin system or structural calculations of the entire greenhouse system.
B. Fabrication and erection of greenhouse skin system and required additional structural framing system.
C. Fabrication and erection of the aluminum gutter system including, when applicable, insulation and pitched liners.
D. Applied finish of aluminum extrusions and sheet.
E. Greenhouse polycarbonate glazing.
F. Greenhouse related flashings.
G. Greenhouse related closures and cladding.
H. Removal and disposal of all existing ¼" Asbestos Containing Glazing System.
I. All translucent panel materials are required to have been approved by the NFPA

1.02 RELATED SECTIONS

A. Metal Fabrications: *Division 05*
B. Flashing and Sheet Metal: *Division 07*
C. Sealants: *Division 07*

1.03 SYSTEM DESCRIPTION

A. Design Requirements:
   1. Provided all required extruded aluminum framing members for the support and attachment of polycarbonate glazing panels and glazing retainers. Glazing panels, to be joined by continuous U shaped battens to match the material of the panel.
   2. Condensation guttering system integral with the perimeter framing members for positive drainage of condensation.
B. Performance Requirements:
   1. Structural Members: Of sufficient sizes to support design loads as prescribed by governing building codes.
   2. The deflection of the framing member in a direction normal to the glazing plane when subjected to a uniform load deflection test in accordance with ASTM E330, and per the above specified loads, shall not exceed L/100.
   3. Water Penetration: No water penetration shall occur when the system is tested in accordance with ASTM E331 using a differential static pressure of 20% of the inward acting design wind load pressure, but not less than 7 psf. Water penetration is defined as the appearance of uncontrolled water other than condensation on the interior surface of any part of the Greenhouse.
      a. Drain water penetrating at joints, as well as condensation occurring within the system to exterior face of the work.
   4. Thermal Movement: Provide for expansion and contraction of component materials as will be caused by an exterior surface temperature range of (+/-) 85 ºF, ranging from –20 ºF to 150 ºF, and an interior surface temperature range of (+/-) 40 ºF, ranging from 40 ºF to 120 ºF. Adjustments in the exterior and interior temperature ranges should be made, based on specific project locations and conditions. The Greenhouse system should allow for thermal movements

without buckling, sealant failure, undue material stress, and other detrimental affects.

5. Where permitted by code, a 1/3 increase in allowable stress for wind or seismic load shall be acceptable, but not in combination with any reduction applied to combined loads. In no case shall allowable values exceed the yield stress.
6. Compression flanges of flexural members may be assumed to receive effective lateral bracing only from anchors to the building structure and horizontal glazing bars or interior trim which are in contact with 50% of the member's total depth.

1.04 SUBMITTALS

A. Submit three copies of shop drawings plans, elevations, and section as required to fully describe the Greenhouse construction for the Owners approval prior to starting fabrication.
B. Submit structural calculations prepared in accordance with the Aluminum Association's Specifications for Aluminum Structures (SAS30) by an engineer qualified in the design of self-supporting sloped glazed systems licensed in the state of New Hampshire.
C. Submit test reports from an independent recognized testing laboratory, or a full size system sample, showing the Greenhouse system has been designed to allow the glazing material to expand and contract in both the X and Y axis. In lieu of test reports, a Greenhouse sample, showing the system components, may be submitted to the Architect for his approval.
D. Submit one 12-in. x 12-in. samples of the glazing material.
E. Submit one 12-in. long snap-on cap.
F Submit one 6-in. long samples of extrusions (with appropriate finish).
G. Submit three sets of as-built drawings and cleaning and maintenance manuals upon completion of greenhouse glazing installation.

1.05 QUALITY ASSURANCE

A. Work of this Section, including design, engineering, fabrication, finishing, preparation at the jobsite, erection and glazing of the greenhouse system shall be the responsibility of the contractor. The manufacturer shall be regularly engaged in the preceding phases of construction of greenhouse and able to demonstrate that he has performed successfully on comparably sized projects and of comparable design complexity over at least five (5) years.

1.06 WARRANTY

A. Submit manufacturer's warranty certifying that greenhouse work was furnished and installed in accordance with the Contract Documents.
B. Certify that glazing system is free of defects in design, material, and construction for a period of ten (10) years from the Date of the glazing completion including, but not limited to, thermal stress, buckling, oil canning, seal failure, audible noises due to expansion and contraction .
C. Warrant polycarbonate against defective materials, color change and hail damage per the polycarbonate manufacturer's ten (10) year prorated warranty.
D. Warrant structural sealant for a period of ten (10) years per sealant manufacturer's standard warranty of merchantable quality. Warranty shall certify that cured sealant:
    1. Will not become brittle or crack due to weathering or normal expansion and contraction of adjacent surfaces.
    2. Will not harden beyond a Shore A 50 (+/-5) durometer, nor soften below a minimum of 10 points.
    3. Will not change color significantly when used with compatible back-up materials.
    4. Will not bleed significantly.
E. Warrant finish per the manufacturer’s standard warranties.
F. Optional extended warranties may be available on some products at an additional cost.
G. Warranty service becomes effective only following payment in full for the contract amount.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Super Sky Products, Inc.; 10301 N. Enterprise Drive; Mequon, WI 53092; Phone (800) 558-0457, (262) 242-2000; Fax (262) 242-7409; *www.supersky.com*.
B. CPI Day Lighting 28662 N. Ballard Drive Lake Forest, IL 60045 Tel: 847.816.1060 Fax: 847.816.0425 www.cpidaylighting.com
C. Gallina 4335 Capital Circle Janesville, Wi 53546 Tel 608-531-0450 Fax: 608-531-0451 www.gallinausa.com
D. Other manufacturers will be considered when the following conditions have been met.
   1. Optional manufacturers must pre-qualify to bid not less than fourteen (14) days prior to the bid closing date.
   2. Complete details are submitted for review by the Architect showing compliance to the drawings and Contract Documents.
   3. Submit system sample showing system's ability to expand and contract in both the X and Y axis.
      a. Systems which mechanically fastened the glazing material are not allowed.
   4. Certify that the polycarbonate glazing material has a co-extruded UV protective coating on both interior and exterior surfaces.
   5. Submit an 18-in. square sample of cellular glazing material.
      a. Glazing material with a ribbed interior surface plane(s) is not allowed.
      b. Multi-cellular glazing material shall have a minimum .7-in. on center, vertical inner wall spacing and a maximum of six horizontal layers.
   6. Certify that the glazing material freely allows condensation to weep from system and that condensation will not significantly affect light transmission values.
   7. Certify that the glazing material does not have any "blinding" optical characteristics during the daylight period for 365 days.
   8. Submit one (1) 12-in. long sample of the anti-dust impermeable tape.
   9. Submit one (1) 12-in. long sample of the aluminum retainer.

2.02 MATERIALS

A. Framework:
   1. Principal Supporting Members: .125-in. minimum thickness extruded aluminum, alloy 6005-T5 or 6061-T6 per ASTM B221. Sizes, shapes and profiles as indicated on the Contract Drawings.
   2. Snap-on Covers and Miscellaneous Non-supporting Trim: .062-in. minimum thickness extruded aluminum, alloy 6063-T5 per ASTM B221 *(as required for expansion joints).*
   3. Supporting aluminum gutters: thickness as prescribed by Greenhouse engineer, based on Greenhouse reactions and applied design loads.
   4. Principal Formed Metal Members: .125-in. minimum thickness aluminum, alloy [5052] or [6061-T6] per ASTM B209.
B. Glazing Strips:
   1. Extruded EDPM rubber designed to comply with the following specifications:
      a. Hardness: ASTM D2240, Type A: Durometer 50 (+/-5).
      b. Tensile Strength: ASTM D412. 800 psi (min.).
      c. Elongation: 300% (min.).
      d. Color: Black.
   2. Compression Set: ASTM D395 Method B, 22 hours @ 212 ºF: 25% (max.).
   3. Heat Aging Characteristics:
      a. 70 hours @ 212 ºF.
      b. Hardness: ASTM D2240, Type A: Durometer 50 (+/-5).
      c. Tensile Change: ASTM D412: -10%.
      d. Elongation Change: ASTM D412: -20%.
   4. ASTM D1171 Weather Resistance at 1 Part Ozone per Million, 500 hours at 20% Elongation: No cracks.
   5. No visual checks, cracks or breaks after completion of tests.

C. Fasteners:
   1. For Exterior Cap Retainers: ASTM A193 B8 300 series stainless steel screws.
   2. For Framework Connections: ASTM B211 2024-T4 aluminum, ASTM A193 B8 300 series stainless steel, and ASTM B316 aluminum rivets, as required by connection.
   3. For Anchoring Greenhouse to Support Structure: ASTM A307 zinc plated steel fasteners.
   4. Exposed stainless steel truss head mechanical fasteners are utilized in accordance with standard connection details.

D. Flashing:
   1. 5005 H34 aluminum .040-in. minimum thickness.
   2. Sheet metal flashings/closures/claddings are to be furnished shop formed to profile in min. 10-ft. lengths, when lengths exceed 10-ft. Field trimming of the flashing and field forming the ends is necessary to suit as-built conditions. Sheet metal ends are to overlap 6-in. to 8-in. minimum, set in a full bed of sealant and riveted if required.

E. Exposed metal finish [interior and exterior] to comply with the following:

   1. Anodized Coatings:
      a. AAMA 611-98 Architectural Class I clear anodized Type AA-M10C22A41: **215-R1**.

F. Polycarbonate Glazing Panels and Batten Caps:
   1. Thermal and solar performance:
      a. Insulation Value ("U") per ASTM C236 configured for/or NFRC 100 **MINIMUM .26**.
      b. Light Transmission (L.T.%) T.B.D per ASTM E1175.
      c. Solar Transmission (S.T.) T.B.D per ASTM #1084 at "normal" (90°) angle of incidence.
      d. Color: Clear.
   2. Flammability
      a. The exterior and interior faces shall be an approved light transmitting panel with a CC1 fire rating classification per ASTM D-635. Smoke density to be no greater than 70, per ASTM D2843. Self-ignition temperature to be 1058°F per ASTM 1929.
      b. The exterior and interior faces shall have a flame spread of 5 per ASTM E84.
   3. Weatherability:
      a. The exterior and interior faces shall not change color more than 3.0 units (DELTA-E by ASTM D2244) after 120 months outdoor weathering an average of at least two (2) samples.
      b. The exterior and interior faces shall be tested by recognized laboratory for weathering evaluation per ASTM D4364-84 (EMMAQUA, UNBACKED), after exposure to minimum concentrated natural sunlight radiation of 5600 MJ/M^2 U.V.(200-385 NM). The exterior and interior faces shall not change.
         2.1 Color more than 3.0 units Delta E, 5.0 units Delta L and Delta B
         2.2 Yellowing index more than 10 units Delta Y per ASTM D1925.
      c. The light transmission as measured by ASTM D1003, shall not decrease more than 6% over ten (10) years.
   4. Appearance:
      a. The panels shall be uniform in color, with cellular cross section.
   5. Impact Resistance:
      a. The panels shall provide for the following minimum performance:
         1.1. ASTM E-822-81 – Velocity up to 82-ft. per second using ice balls of up to 1.1-in..
         1.2. ASTM D-3841/SPI – Impact and Shatter Resistance of 200 ft. lbs.

2.03 FABRICATION

A. Construct Greenhouse(s) using extruded aluminum members.
B. Construct Greenhouse(s) using a continuous aluminum curb with expansion joints as required.
C. Insofar as is practical, fit and assemble work in the manufacturer's shop. Work that cannot be permanently assembled shall be shop-assembled, marked, and disassembled before shipment to the jobsite.
D. Design polycarbonate retainer fasteners to resist uplift loadings. Spacing to be determined by structural calculations, when applicable.

E. Shop locate, drill, bolt, or weld, aluminum clips to framing members.
F. Locate weep holes in curb to positively drain condensation to exterior of Greenhouse at each rafter connection.

PART 3 EXECUTION

3.01 EXAMINATION

A. Upon arrival to the jobsite for installation of the specified work, the manufacturer's erector is to examine the structure and substrate to determine that it is ready to receive the Greenhouse work. Report any faults to the General Contractor prior to proceeding with Greenhouse installation.

3.02 PREPARATION

A. Contact between aluminum and dissimilar metals shall receive a protective coating of asphaltic paint for the prevention of electrolytic action and corrosion.
B. Greenhouse manufacturer and manufacturer's erector excludes all field measuring, demolition, removal, replacement, or re-work of any existing material.

3.03 INSTALLATION

A. Install Greenhouse frame, polycarbonate and accessory items as needed in accordance with manufacturer's instructions.
B. Install Greenhouse system under the direction of the Greenhouse manufacturer's designated erector.
C. Erect system plumb and true, in proper alignment and relation to established lines and grades as shown on approved shop drawings.
D. Anchor Greenhouse to structure in strict accordance with approved shop drawings. Apply sealing materials in strict accordance with sealant manufacturer's instructions. Before application, remove mortar dirt, dust, moisture and other foreign matter from surfaces it will contact. Mask adjoining surfaces to maintain a clean and neat appearance. Tool seal compounds to fill the joint and provide a smooth finish.
E. Furnishing of temporary covering and weatherproofing of the Greenhouse openings, if required by the General Contractor, and removal of the protective measures during and after the Greenhouse installation is excluded by the manufacturer and the manufacturer's erector. ANY TEMPORARY COVERINGS THAT MAY BE REQUIRED ARE NOT TO OBSTRUCT OR INTERFERE WITH THE GREENHOUSE INSTALLATION IN ANYWAY.

3.04 FIELD QUALITY CONTROL

A. Water Leakage: Field check in accordance with AAMA 501.2 in proportionate areas. There shall be no uncontrolled water leakage as defined in AAMA 501.2. Water supply to the Greenhouses, with adequate water pressure, is to be furnished by the General Contractor. Tests are to be conducted upon completion of the installation with no remobilization or down time included to accommodate either water supply availability or witness personnel schedules. Testing is to be performed by the manufacturer's authorized personnel with a maximum of five (5) man-hours for set-up, testing and clean-up. Independent laboratory testing and reports, if required, are to be ordered and directed by the Owner and/or General Contractor.

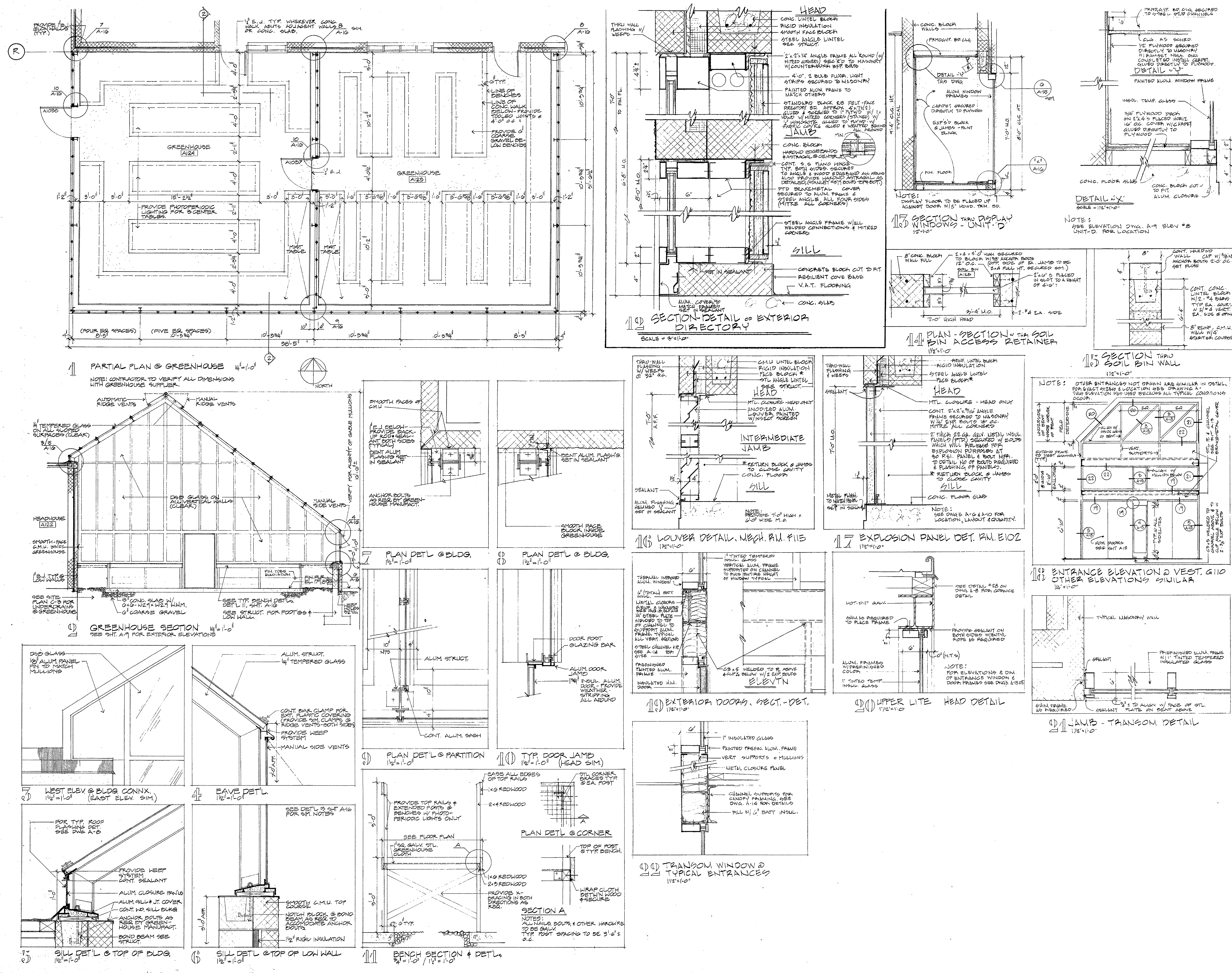
3.05 CLEANING

A. Install Greenhouse frame and associated metal to avoid soiling or smudging the finish.
B. Clean polycarbonate and frame at time of installation. Final cleaning, is required, subsequent to completion of project, is to be performed by installing contractor.

3.06 PROTECTION

A. The Greenhouse manufacturer does not provide, nor does it include any temporary protection to the Greenhouse and its materials after the installation is complete. Protection of the Greenhouse from ongoing work by other trades shall be the responsibility of the General Contractor. The manufacturer is responsible only for the damage caused by the personnel under its control and responsibility.

END OF SECTION



Drummey Rosane Anderson Inc. — Architects & Engineers
consulting architects

Anderson-Nichols Engineers
consulting engineers

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40 webster street, manchester n.h. 03104, 603 622 5486
architects

AREA 15 REGIONAL VOCATIONAL EDUCATION CENTER
MANCHESTER, NEW HAMPSHIRE

CONTENT: GREENHOUSE & WINDOW DETAILS

SCALE: 1/4" = 1'-0", 1 1/2" = 1'-0"

DATE: 2.19.79

DRAWN: B.B.

REVISED:

A16

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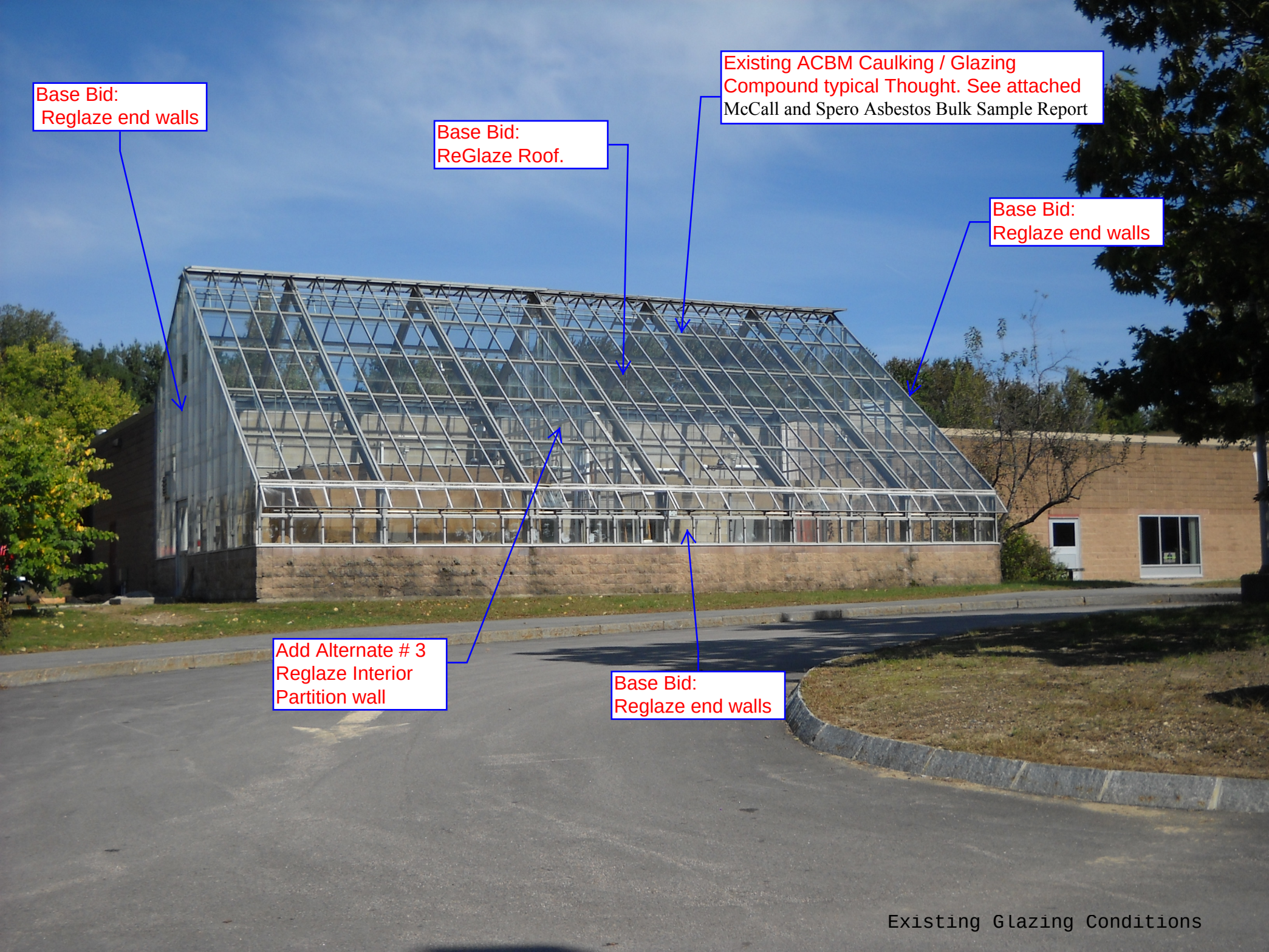


Existing Glazing Conditions

McCall and Spero
Environmental, Inc.
Specialists in Microanalysis

1831 Williamson Court • Suite 100 • Louisville, KY 40223
Phone (502) 244-7135 • (800) 841-0180 • FAX (502) 244-7136
E-mail: customerservice@mselabs.com • Website: www.mselabs.com

Date: February 7, 2012

Attention: Christopher Proulx
City of Manchester, NH

Subject: Analysis of bulk samples for asbestos mineral fibers by Polarized Light Microscopy (PLM) with Dispersion Staining (EPA/600/R-93/116)

RE: MSE-P272COM
Manchester School of Technology Project
COM# 36294

Dear Mr. Proulx:

McCall & Spero Environmental, Inc. has completed the analyses of the bulk samples we received from your offices on February 7, 2012. These samples represent the bulk samples from the Manchester School of Technology Project.

The PLM bulk analysis was performed according to the "Method of the Determination of Asbestos in Bulk Building Materials", R. L. Perkins and B. W. Harvey (EPA/600/R-93/116).

The results for the three (3) samples are summarized in the following report. Please note that for samples consisting of two or more distinct components, each component is analyzed and reported individually (EPA 40 CFR Part 61 [FRL-4821-71]).

Thank you for consulting McCall & Spero Environmental, Inc. Should you have any questions concerning these results, please contact our office.

Sincerely,

J. Scott Board, B.S.
Laboratory Director

NVLAP®
NVLAP Lab Code 101895-0

SUMMARY OF PLM BULK ANALYSIS RESULTS

Project Name: Manchester School of Technology Project COM# 36294
McCall & Spero Environmental Project No. MSE-P272COM

MSE # P272COM-	SAMPLE # DESCRIPTION	ASBESTOS TYPE & %	OTHER FIBROUS MATERIAL & %	% NON-FIBROUS MATERIAL	COLOR
001	36294-1 Chaulking	CH / 5%	Cellulose / 2%	93%	Gray
002	36294-2 Chaulking	CH / 5%	Cellulose / 2%	93%	Gray
003	36294-3 Chaulking	CH / 5%	Cellulose / 2%	93%	Gray

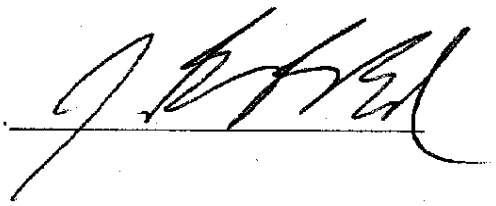
NOTES:

ND = None Detected CH = Chrysotile A = Amosite AC = Actinolite
CR = Crocidolite AN = Anthophyllite TR = Tremolite

For samples consisting of separate components, each component is analyzed and reported separately.

Results apply only to items tested. Quantification is accurate to within ± 10%. Results from this report must not be reproduced, except in full, with the approval of McCall & Spero Environmental, Inc. This report must not be used to claim product endorsement by NVLAP or any agency of the U.S. Government.

** EPA recommends that bulk materials found negative for asbestos or less than one percent asbestos by polarized light microscopy that fall into one of five dominantly nonfriable categories be reanalyzed by an additional method, such as transmission electron microscopy. (EPA Notice of Advisory, FR Vol. 59, No. 146 & Test Method EPA 600/ R-93/ 116).

Analyst: J. Scott Board, B.S. 

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BULK SAMPLE CHAIN OF CUSTODY FORM

Company: Manchester, NH **Telephone #** 603-624-6555 X15 **Fax #:** 603-624-6562

Contact: Christopher Proulx **Client Project Number:** 36294

Relinquished by: C. Proulx **Date:** 2/6/2012 **Time:** 12:00 pm

Written Report To: cproulx@manchesternh.gov

Project Name: MANCHESTER SCHOOL OF TECHNOLOGY

Turn-Around (Circle One): (Same Day) 24 Hour 2-3 Day 4-5 Day Weekend Rush After Hour Rush

Analysis Requested (Circle One): PLM Bulk Analysis TEM Qualitative Analysis TEM Quantitative Analysis (4-5 Day)

For Laboratory Use Only

MSE Project # P872COM **Method:** EPA/600/R-93/116

Samples Received by: [signature] **Date:** 2/7/12 **Time:** 10 am

Client Sample Number	Location	Sample Description	Sampled By
36294-1	GREENHOUSE GLAZING	GRAY CHAULKING	CP
36294-2	GREENHOUSE GLAZING	GRAY CHAULKING	CP
36294-3	GREENHOUSE GLAZING	GRAY CHAULKING	CP